



AGRICULTURAL RESEARCH INSTITUTE

PUSA

THE ENTOMOLOGIST.

VOL. LXXIII.]

JANUARY, 1940.

[No. 920]

A DAY'S COLLECTING ON THE ISLE OF SOUTH UIST.

BY J. W. HESLOP HARRISON, D.Sc., F.R.S.

THIS season we returned to our old headquarters at Stoneybridge on the Isle of South Uist to complete, as far as possible, our survey of the flora of the northern portions of the island. As we looked around from our abode, the usual belief that the Outer Hebrides consisted of expanses of loch, marsh, moor, rock and mountain seemed quite justified. However, we knew that that picture was far from complete. To the west, quite close to us, it could be amplified by stretches of glistening white sands and glorious dunes, whilst to the east were rushing mountain torrents, penned in by massive cliffs, and at times tumbling over foaming, hissing waterfalls.

Moreover, we were fully aware that the prevalent view that no native woodland exists in these islands was quite erroneous. If one is prepared for a strenuous walk of twenty miles or so, aspens, sallows, hazels, birches and mountain ashes are encountered not uncommonly, and even, on occasion, massed into natural woodlands. One such woodland exists along the Allt Volagir, a beautiful and impressive stream rushing down the slopes of Beinn Mhor and Spin. This we determined to investigate fully, so, with all our collecting equipment, we set out from Stoneybridge early one August morning.

Striking along the path towards Beinn Mhor, with lochs on both sides of us, we were first attracted by the buzzings of various humble bees. These, except for one species, *Bombus hortorum*, were very different from those to which one is accustomed in the North of England. The bulk of the examples captured were workers, with a fair percentage of queens, of *Bombus smithianus*, *B. distinguendus* and *B. jonellus* var. *hebridensis*. Most were probing flowers of the Lousewort, although the first occasionally patronized the Ragwort, and the second the Burdock. Often enough, on the same ground, the dragonflies *Sympetrum striolatum* race *nigrofemur*, *Libellula quadrimaculata* and odd *Sympetrum danae* were disturbed.

As we proceeded, the brilliant Hebridean form of the Meadow Brown, *Maniola jurtina*, often swung across our path, and maintained itself until we were well over the 1000 ft. contour line. Less commonly *Aglais urticae*, in a large dark form, obviously

evincing a great preference for tansy flowers, flashed from flower to flower. *Pieris napi*, too, appeared in its usual island guise.

Crossing the road, we pressed over the moorland until we reached the Abhainn (River) Gheatry, where the presence of an abundance of *Salix aurita* and *S. atrocinnerea* tempted us to unfold our beating-trays—an occurrence which must be unique in the history of Hebridean collecting.

At first nothing rewarded our efforts except countless larvae of the sawflies *Pteronidea pavidus* and *P. nigricornis*, and in the case of *S. aurita*, of the Tortricid *Acalla hastiana* and the Psyllid *Psylla dudai*. On the latter shrub, likewise, galls of the Cecidomyids *Rhabdophaga rosaria* and *R. salicis* were observed. A little higher, however, just as the Coire Dubh was reached, from well-grown *Salix atrocinnerea* magnificent rusty-red larvae of *Notodonta ziczac*, of a form never before seen by me, were dislodged; these provided the first record of that species from the Outer Hebrides. Similarly, the casual mountain ashes yielded larvae of *Opisthograptis luteolata*.

As we entered a region of well-grown bilberry bushes these were well worked, but they proved unprofitable from the larva standpoint although, as far as imagines were concerned, they supplied us with reddish *Hydriomena furcata*, *Camptogramma bilineata*, *Cidaria immanata*, *Mesoleuca ocellata*, *Abraxas grossulariata* and last, but not least, *Carsia paludata* var. *imbutata*. The last-named species is new to South Uist, and this is only the second occurrence in the Outer Hebrides.

Leaving the gorge, we now traversed the lower slopes of Spin, over the roughest of rough heather toward Loch Iarras. Throughout this part of our journey queens of *Bombus smithianus* were quite common at the *Erica* flowers. From the heather, larvae of *Anarta myrtilli*, *Acronycta menyanthidis*, *Hadena pisi*, *Saturnia pavonia*, *Lasiocampa quercus* and *Bombyx rubi* were collected, with a sprinkling of imagines of *Cidaria testata*, *Larentia didymata* and *Celaena haworthii*.

Loch Iarras, itself, looked very promising, with its brave array of waxen white waterlilies, often lying in a frame of overhanging mountain ashes, decked with a beautiful supply of brilliant red berries. Nevertheless, except for the usual swarms of *Abraxas grossulariata* clinging to the heather, it gave us little except the dragonfly *Ischnura elegans* and *Hydrocampa nymphaeata*. Towards its eastern extremity matters improved decidedly for, first larvae of *Euplexia lucipara* were knocked from bracken, and then we came to a cliff against which was spreadeagled a group of aspens and wild roses. Out came the beating-tray, and soon the merry thump of larvae was heard, those of *Dicranura vinula* being in the majority. Accompanying them, however, was a goodly crop of *Cymatophora*

or, the first I have noticed in the Outer Islands, although other workers have reported the species from Lewis. As I have carefully searched aspens on Barra, Vatersay and Sandray, I can safely testify to its absence from those isles. Further along these cliffs, on a rough looking ledge, there straggled a small colony of *Salix aurita*, which supported larvae of *Pygaera pigra*, hitherto seen by us only on Pabbay in the outer group of islands.

Once more climbing, we encountered the Allt Volagir gorge just below the 1050 ft. level, scattering from the cliffs at its entrance shoals of *Camptogramma bilineata* and *Cidaria immanata* of various forms. However, what interested us most was the instant appearance of beautiful birches, aspens and mountain ashes, not very tall, it is true, but still of shapely growth. These were all carefully beaten, but nothing new was added to our bag save larvae of the sawflies, *Trichiosoma lucorum* and *Croesus latipes*, from birch, and *Psylla sorbi*, with a single *Trichiosoma sorbi*, from mountain ash. In addition, however, the birches produced galls of *Contarinia betulina* and *Massalongia rubra*.

For a time only scattered *Dicranura vinula* came from the aspens, but later, *Notodonta ziczac* once more put in an appearance; these, in contrast to those from *Salix cinerea*, presented a deep clear grey hue.

As we carefully picked our way down the gorge the scenery became more impressive, and the vegetation, including the trees, more luxuriant, whilst at intervals the dragonflies already mentioned once more attracted our notice, now, however, reinforced by their larger relative *Aeshna juncea*. Further, wild roses abounded, and some were just as well grown as ordinary mainland examples of the corresponding species. One magnificent specimen of *Rosa glaucophylla* not only provided larvae of the sawfly *Cladius difformis*, but also galls of the Cynipid *Rhodites eglanteriae* and the Cecidomyid *Perrisia rosarum*, both new to the South Uist fauna. The same plant, too, gave larvae of *Cidaria miata*.

As we neared the sea the ravine broadened, but a waterfall forced us to make a detour. We therefore left the gorge to re-enter it after a descent of a quarter of a mile, after which we proceeded upstream. Here we really marvelled, for we passed into a lovely wood, containing not only the trees already mentioned, but also fine handsome hazels, bearing a goodly crop of ripening nuts. Climbing up the trees and the cliff faces were fine sheets of Ivy of a luxuriance which needed to be seen before being believed. Finally, the hazels gave place to aspens and birch; the size of the former may be gauged when it is mentioned that two of them supported huge herons' nests.

Beating these produced little that was novel except a somewhat

green form of *Hydriomena furcata*, brownish *Boarmia repandata* and also *Selidosema ericetaria*, the latter not new to the Hebrides, for I captured it at Papadil, Rhum, in 1938.

Just clear of the aspens a truly wonderful sight presented itself, inasmuch as the whole of the cliff face was clad with serried ranks of the Royal Fern (*Osmunda regalis*), all more than 6 ft. high, alongside which flashed, as if on sentry, a group of the dragonfly *Aeshna juncea*. Retracing our steps, we left the wood, but not the objects of interest, for on the ledges of the gorge below grew the rare Pyramidal Bugle (*Ajuga pyramidalis*) and enormous Foxgloves, from which larvae of *Eupithecia pulchellata* were secured. Strangely enough, too, the Common Ragwort, as well as the Golden Rod, occupied the cliffs, and on the flowers of both casual examples of *Charaeas graminis* and *Hydraecia lucens* were noted.

In the end we reached the sea and were surprised to encounter the aspen once again, in an anything but stunted form, overhanging the sea loch for a considerable distance. These shrubs were vigorously beaten for larvae, but all that we obtained were leaves galled by *Eriophyes varius* and a species of *Idiocerus*. We had now to face the worst, as a terrible tramp homeward lay before us. This we beguiled by working the sallows for *Acalla hastiana*, when, incidentally, the sawfly galls *Pontania pedunculi* and *P. puella* were observed. In the same way, near the abandoned crofts, we took an abundance of the Psyllid, *Trioza urticae*, and the moth, *Simaethis fabriciana*, from the common nettle. Our last "takes" were empty cocoons of the Six-spot Burnet (*Zygaena filipendulae*), and these had to suffice. Even the glimpse of a butterfly, possibly *Eumenis semele*, failed to tempt us to further efforts!

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PLUSIA BRACTEA IN EAST TYRONE.—*Plusia bractea* has been fairly common here for the last two years, 1938-39. Some years it is very scarce or does not appear at all. This season it was common in a swampy meadow, flying at dusk to the Marsh thistle, *Cnicus palustris*, accompanied by other representatives of the family; in fact on one evening in July this year I observed or captured at this thistle the following: *Plusia chrysis*, *P. bractea*, *P. iota*, *P. pulchrina* (very worn and faded), *P. festucae* and *P. interrogationis*; in this locality the last-mentioned species feeds on *Calluna*. My friend the late J. E. R. Allen, of Enniskillen, bred and captured large numbers of *P. bractea* when he was at Portora School, and I believe it is still common there.—THOMAS GREER; The Bungalow, Sandholes, Dungannon, November 6th, 1939.

SCIENTIFIC NAMES : A PLEA.

BY BRIGADIER W. H. EVANS, C.S.I., C.I.E., D.S.O., F.R.E.S.

THE assignment of scientific names to insects is not a new subject, but current procedure remains haphazard. I should like to discuss the various "malpractices" and then suggest a simple system, hoping that my proposals may lead to a discussion and perhaps to some fruitful results.

Every insect has to be given two names: the first, beginning with a capital letter, designates the genus and the second, beginning with a small letter, the species. A malpractice followed by some authors is to begin a specific name with a capital letter if it relates to the name of a man, *e.g.* "Harrisi" after Mr. Harris; this system is followed in Junk's catalogue. [It is permitted by the rules (Article 13).—ED.]

Many people spend a long time in devising a composite Greek or Latin word for a generic name in order to define the diagnostic character. This was doubtless a very suitable practice in the days long gone by, when every educated person knew Latin and Greek, but now they do not. The practice led to the employment of long words, taking a long time to write and to memorize, and they were often misspelt. On more than one occasion it has been found that the character, whereon the name was based, does not apply to species which have to be included in the genus. One author (E. Y. Watson) resorted to Hindustani for two Australian genera, *viz.* "*Motasingha*" (Thick-horn) and "*Putlasingha*" (Thin-horn).

When an author is too lazy to think out a new name, he sometimes resorts to the practice of extending the name of an allied genus, such as "*Adopoea*" to "*Adopaeoides*". "*Adopoea*" has now been superseded by "*Thymelicus*", so that "*Adopaeoides*" becomes meaningless.

It seems to be generally accepted that a generic name is a Latin noun, but for a specific name it seems permissible to employ a noun in the nominative or the genitive case or an adjective, the gender-ending of which has to conform to the gender of the genus. Many authors insist, however, on adhering to the exact spelling given by the original author, which is a practice to be commended.

Names of species based on the facies often lead to unfortunate results. What is one to do when a species is found with a more golden hue than one that has been called "*aureipennis*", or of a sub-species of "*argenteo-ornatus*" in which the silver adornment has become obsolete? "*Pallida*" can be extended to "*Pallidior*" or "*pallidissima*", or even to "*super-pallidissima*", but what is

one to do if a still paler form is discovered? Names like "*brunneo-fuscescens*", "*suffusa-variegata*", "*fusco-nigrescens*", "*margino-elongata*", may be expressive and ingenious, but they are cumbersome and dangerous. Another form of this malpractice is represented by such names as "*affinis*", "*affinissima*" and "*similis*".

Perhaps the most unfortunate results arise in the case of names based on localities. Sometimes the place is not to be found in any atlas; or the place name may be changed; or the insect may subsequently be found to be very much commoner somewhere else. Sometimes the name is unpronounceable: for instance, I tried in vain recently to restrain an entomologist from calling an insect "*htawgarvensis*" after a Burmese village. Sometimes the label is wrong: a case arose recently in which an insect named "*californica*" was found to have come from the Philippine Islands. Sometimes, when a local name such as "*sumatrensis*" has been used to designate the Sumatran form of an insect, it has been found that the name of the species is invalid for some reason or other; "*sumatrensis*" then has to be used for the species, which may be found from India to Australia. Or "*sumatrensis*" may be found to be an independent species occurring in many places other than Sumatra.

A chapter of accidents has arisen over the common English Hesperiid we used to call "*Augiades sylvanus*", a nice name, which we were fond of. The application of the law of priority forced "*Ochlodes*" on us in place of "*Augiades*", while "*sylvanus*" was found to be a homonym of a West African Lycaenid and we were given in its place "*venata*", followed by "*septentrionalis*"; "*venata*" was the name applied to the Chinese form of "*sylvanus*" because the veins were darker, while "*septentrionalis*" had been coined for the British subspecies of "*sylvanus*" because it lacked some of the continental varieties of that species! But the sad story does not end here by any means. Recent researches tend to show that "*venata*", having different genitalia and a different antennal club from our friend "*sylvanus*", must be regarded as a different species. The next oldest name to replace "*sylvanus*" is "*anatolica*", coined by Plötz for the somewhat larger form found in Anatolia. The oldest name for the European subspecies is "*faunus*", coined by Turati for an aberration he obtained in France. But the misfortunes do not end here. The name "*sylvanoides*" was coined for an allied species found in North America and also for a Western Chinese form of "*sylvanus*", while the name "*sylvanellus*" was coined for a variety; these names become meaningless with the abandonment of "*sylvanus*".

I have been naming butterflies for thirty years and have been guilty of most of the malpractices I have pointed out. To avoid

further trouble I have devised for my use what I call the "Nora-Dora system", whereby I mean the employment for species or forms of short euphonious names, all deliberately meaningless and having no relation whatsoever to the structure, appearance or locality of the insect. In connection with the revision of the Hesperiidæ, upon which I am engaged, I have to coin a large number of new names and so, in order to avoid brain-strain whenever a new name is required, I have prepared a list of over 500 suitable names culled from indexes relating to other families or coined as I plodded through the alphabet. I make it a practice never to repeat a specific name in the family; this is at present forbidden within a genus, but by extending the rule to the family, trouble cannot arise when a species is transferred from one genus to another.

When selecting a new name for a genus, I have come to the conclusion that the best plan is to take the best-known species as the type, and if it has a short, euphonious name, to adopt that name as it stands for the genus. What can be nicer than the name of the bird, whose case I pass daily in the Museum, viz. "*Pica pica pica*", abbreviated in my "*Bird Book for the Pocket*" to *Pica*? And there are 22 British birds named on the same system. If the specific name is unsuitable, a short, euphonious name can be coined or found in my list of new specific names.

By the adoption of my "Nora-Dora" system not only is a vast amount of time and brain-strain saved, but posterity will not be burdened with such names as "*doello-juradori*", "*hama-maelides*", "*pemphygargyra*", "*perissographus*", "*pottowattomie*", "*Hemiteleomorpha*", "*Mnasitheus*", "*indeterminabilis*".

THE HYDRAECIAS OF THE NICTITANS GROUP IN THE HEBRIDES.—During the course of the present season (1939) I have completed the re-examination of my preparations of the genitalia of this genus with rather interesting results. In the Raasay group I formerly considered *H. crinanensis* Burrows to be the most abundant species, followed by *H. lucens* Fr. Now, as the result of the accumulation of more material, I am compelled to advance *H. lucens* to the first place, with *H. crinanensis* coming second; *H. paludis* Tutt must still be regarded as very rare. Similarly I made the remark in my original paper (*Proc. Univ. Phil. Soc.*, 10: 315) that genuine *H. nictitans* had never come under observation; it may now be recorded for the Isle of Scalpay, as far as the islands north of Skye are concerned. *H. crinanensis* and *H. lucens* occur on Eigg, Rhum, Canna, Sanday, Soay and South Uist with *H. lucens* predominant, whilst *H. paludis* may be taken very sparingly indeed on Eigg, Canna and Sanday. One example of *H. nictitans* turned up on Soay.—J. W. HESLOR HARRISON; King's College, University of Durham, Newcastle upon Tyne.

NOTES ON COLLECTING IN SWITZERLAND, 1939
(RHOPALOCERA).

BY COLONEL G. K. GREGSON, D.S.O., F.R.E.S.*

SOME notes made during a rather hurried trip to Switzerland this troublous year may be of interest, although we worked only localities already well known, and that with an eye always on the international situation!

We set out by car on June 26th, our principal objectives being *Plebejus sephirus* ssp. *lycidas* on the Simplon road, and *Erebia christi* in the Laquintal. From Calais on June 27th we drove to St. Quentin for the night and reached Contréxeville on the 28th. On the way to Contréxeville we stopped for a short time in the Forêt de Van, a few miles short of Domremy, and in some gleams of sunshine took a few *Limenitis populi*, in fresh condition, on patches of moisture in the forest rides.

Three days at Contréxeville, two of which were wet, produced a nice series of *Euphydryas maturna*. *Pararge achine*, which in 1935 was abundant and not too fresh on July 4th, was this year evidently only just coming out. Three fresh specimens, the only ones seen, were taken. In this same locality, the Bois la Voivre, where *Apatura iris* and *A. ilia* were abundant and worn a week later in 1935, only one *ilia* was seen on the wing this year.

We had hoped for *Coenonympha hero*, but heard from Brigadier-General C. H. C. van Straubenzee, whom we had the good fortune to meet staying at the same hotel as ourselves, that he had last seen it on the wing on June 10th, and that it was probably over. This we found to be the case.

After a night at Vevey on July 2nd we made our next stop at the Hotel Bellevue, Simplon Kulm, where we remained till July 11th. On our way to the Simplon we turned north in Martigny to Follaterre on the offchance of finding that very beautiful Lycaenid, *Jolana iolas*, still in respectable condition. On a previous occasion, *i. e.* in June, 1935, we had found it there only in one very restricted locality, a rocky gully facing south, in which the food-plant, *Colutaea arborescens* grew in some profusion. It was a real disappointment, this year, to find that the gully had been quarried and all but one very small bush of *arborescens* destroyed. This was once one of the strongholds of *iolas* in Switzerland, and it will be interesting to see if it ever re-establishes itself there.

* My grateful acknowledgments are due to Mr. B. C. S. Warren for his kindness in checking identifications, looking through these notes and correcting nomenclature.

For anyone who has not driven over the Simplon Pass before, it may be helpful to know that the first part of the climb, from Brig to the "First Refuge", is very steep, with many hairpin bends, badly cambered, and the road surface poor. After the "First Refuge" the climb is easy.

On July 4th we began our search for *Plebejus sephirus* ssp. *lycidas*. The portion of the road given by Sloper, Wheeler and Sheldon (*The Butterflies of Switzerland and the Alps of Central Europe*—Wheeler) is from just above Second Refuge, where in June, '25, it appears to have been abundant, to Ganter Bridge. We spent three whole days on this length of road, beginning, on the first day, by searching the bank bordering the road. No *lycidas* were found anywhere near Second Refuge. Though always scarce, the insect increased in numbers the nearer we approached to Ganter Bridge, in the neighbourhood of which nearly all our captures were made. Finding them so scarce on the bank by the road we explored the hillside above for a long stretch to a height of about 250 ft. Here we found *Lysandra escheri* and *Lycaeides calliopis*, but never *lycidas*. It occurred, in fact, only on the bank, occasionally crossing the road itself though apparently always returning, since we never found it on the hillside below the road. It flies with *L. calliopis* (Boisd) (= *argyrognomon*, Auct.), *L. escheri*, and other "blues". *Lycidas* can be distinguished from *escheri* on the wing by its duller colour, but it is impossible to tell it from *calliopis*, except by close inspection. In a glass-bottomed box, where as a rule only the underside is presented for examination, the silver spots and less distinct white submarginal band of the hind wing in *calliopis* make identification easy—as also Wheeler's guide, the "straight row of four nearly equal-sized black spots across the base". On the upperside *lycidas* is distinguished by the row of black submarginal spots on the hind wing. On July 4th and 5th the females were mostly worn, but on 10th we were lucky to find two quite fresh, which seemed to show that the species was still coming out, though males that day were scarcer than ever.

July 6th, 7th and 8th were spent in the Laquintal. This beautiful wild valley is about 5 kilometres long from the hairpin bend on the Simplon road to the glacier at the head of the valley. The last human habitation is about halfway up, a small chalet and a cluster of cow-sheds. Here the path up the valley virtually ends. Beyond are tracks which peter out in a tumble of rocks. The valley runs nearly East and West, and both North and South faces are very steep. Such was the area in which we were to find an insect in "isolated spots, first between 4800 and 5000 ft. and then higher up the valley between 5600 and 6000 ft." (*Monograph of the Genus Erebia*—Warren). We eventually found both localities, as

we had expected, on the North side of the valley. Our first day was a long, tiring one, as my wife and I had to explore most of the likely ground. The result was two *E. christi*, one taken on the main path rather over one kilometre from the Simplon Road and, as far as I could judge from our map, about 4800 ft. above sea-level, the second far up the valley on a grassy slope at somewhere about 6000 ft. This day was cloudy, and we were handicapped in our search by the *Erebia*'s habit of performing the disappearing trick the moment the sun goes in. Our second and third days in the valley we worked the lower locality, from the place on the path where the single specimen had been taken on the first day, up the very steep grassy slope to about 300 ft. above the path. Here we eventually found the insect in some numbers, and in the two days, both brilliantly fine, we took a further twenty, all, unfortunately, males. The area where they are to be seen at all commonly is very restricted. It was nearly impossible to move after them on the steep slopes, and we eventually took up positions in likely spots where the foothold was good and netted those that passed. Also flying with *christi* were *Erebia alberganus*, *E. euryale*, *E. triarius* and *E. mnestra*. It was some time before we could even approximately distinguish *mnestra* from *christi* on the wing. There is a difference, however, which practice enables one to see, in both general appearance of shade and flight. The flight of *christi* is slightly more sluggish, the shade appears a little darker and less reddish. Once caught, *christi* is easily distinguished by the black spot above nervure 6, upperside fore wing, and by the broad greyish anti-marginal band on the underside hind wing (Warren's monograph). A projected trip to Fusio to find *Erebia flavofasciata* on the Campolungo Pass had to be abandoned, and on July 11th we left our comfortable rooms in the Bellevue Hotel with regret and drove to Leukerbad. Passing through Susten we stopped in the Pfynwald to look for *Polyommatus meleager*, but during a long search in hot sunshine we saw very few butterflies about, and no *meleager*. Returning to Susten to cross the Rhone bridge there, we found a steep, narrow, winding road as far as Leuk, from just beyond which it is an easy run to Leukerbad.

Here we spent five days. On the 12th we worked the fields and slopes near at hand. *Erebia melampus* swarmed everywhere. *E. meolans* and *E. oeme* were both common. The 13th we spent on the moraines on the north side, and on the shale slopes on the south side near the summit of the Gemmi pass. We found *Erebia pluto anteborus* rather scarce on the north side, but abundant on a steep shale slope on the south side. *E. gorge*, with f. *erynis*, and *E. meolans* f. *valesiaca* were also about in fair numbers on the pass. On the morning of July 14th clouds were still low after a pouring

wet night, and as prospects at or above Leukerbad seemed pretty hopeless we took the car down to Martigny. On the way, in sunshine again, we stopped at the village of Pfyn and made a long and careful search for *P. meleager* without success. A single *Apatura ilia*, with symmetrically formed but much undersized hind wings, was taken. We reached Martigny about midday and for an hour or more watched the rain coming down in torrents. As soon as it cleared we made up past the Tour de la Batiatz to find *P. meleager* fairly common and evidently just coming out.

On July 15th we took a few more *E. meolans* and *E. oeme* in the fields above Leukerbad, and on the 16th heavy rain prevented any collecting. On the 17th we walked up through the Tschaferen Wald to Fluh Alp—a delightful trip in perfect weather. From Fluh Alp, which is about 2000 ft. above Leukerbad, we returned by the north side of the stream which flows from the Dala glacier, passing close to a small cluster of huts called Clavinen. *Parnassius mnemosyne* was flying in abundance on the Fluh Alp, and in this area we took also *Erebia pandrose*, *E. pharte*, *E. epiphron* f. *nelamus* and *E. tyndarus*. Near Clavinen we found a very local colony of *Maculinea alcon*, flying with *M. arion*. One *arion*, the only one taken from this locality, has the spots on the underside of both fore and hind wings much elongated, with some coalescence. I believe this aberration is unusual in *arion*. On July 18th we drove to Visp, left the car in a shed belonging to the Railway Company, free of charge, and took the train to Zermatt. The weather at Zermatt during our four days there was persistently bad and we were able to do very little collecting. A day on the Gornergrat produced sufficient *Erebia phloeo areas* to complete a short series. It was not very common, and extremely difficult to catch in the high wind which was blowing. *E. gorge*, with f. *erynis* in about equal proportion, was abundant. A day spent near the Bodengletcher produced no *Albulina nicias* (= *donzelii*) in a locality where in 1937 it had been fairly common. We left Zermatt on the 23rd for St. Croix-les-Rasses in the Jura, stopping for the third time at Pfyn village, to be at last rewarded by seeing *P. meleager* out. It appears that it is on the wing later in the Pfynwald than amongst the Martigny vineyards. The specimens taken were markedly smaller, both male and female, than those from Martigny.

During the 24th and 25th, at Les Rasses, the stormy wet weather continued, though we managed to find a few intervals of warm sunshine at Eclépens on the 24th. We went there for *Pyrgus cirsi* but were probably too early and saw none, nor the next day at Tramelan, though weather conditions may have been responsible for our lack of success.

Leaving Les Rasses on the 26th we drove *via* Langres and St.

Quentin to Calais—and so home. In the magnificent Gorge de la Vaux, beyond Pontarlier, we had stopped for a few moments and had seen *Apatura iris* and *Strymon spini*.

LIST OF RHOPALOCERA TAKEN, WITH LOCALITIES AND DATES
FIRST SEEN.

C. = Contrexeville. Cl. = Clavinen and Fluh Alp. D. = Domremy. Db. = Doubs. E. = Eclépens. F. = Follatterre. G. = Gemmi. Gt. = Gornergrat. L. = Leukerbad. Lt. = Laquintal. M. = Martigny. P. = Pfynwald. S. = Simplon Pass. Sr. = Simplon Road. Z. = Zermatt.

a. = abundant. c. = common. f.c. = fairly common. s. = scarce.

Parnassius mnemosyne, Cl., July 17th, a.

Aporia crataegi, C., June 29th, c.

Pieris napi bryoniae, Lt., July 6th, c.

Euchloë ausonia ssp. *simplonia*, S., July 9th, f.c.; Z., July 20th (1 only).

Erebia pharte, Cl., July 17th, s.

E. christi, Lt., July 6th, c. locally.

E. mnestra, Lt., July 6th, c.

E. pluto oreas, Gt., July 19th, f.c.

E. p. anteborus, G., July 13th, a.

E. melampus, L., July 12th, a.

E. gorge and *f. erynis*, G., July 13th, f.c.; Gt., July 19th, a.

E. triarius, Lt., July 7th, c.; Sr., July 4th, c.

E. alberganus, Lt., July 7th, c.; Sr., July 4th, f.c.

E. epiphron aetherius, Z., July 20th.

E. e. aetherius f. nelamus, Cl., July 17th.

E. oeme, L., July 12th, a.

E. o. lugens, L., July 15th, s.

E. meolans, L., July 15th, a.; G., July 13th, f.c.

E. m. valesiaca, L., July 15th, f.c.; G., July 13th, f.c.

E. euryale adyte, Lt., July 7th, s.; Z., July 20th.

E. pandrose, S., July 9th, f.c.; G., July 13th, f.c.

E. montanus, Sr., July 10th, s.; Z., July 20th, s.

E. tyndarus, Cl., July 17th, a.

Hipparchia aelia (Hoffms.) (= *alcyone* Schf.), F., July 3rd, c.

Satyrus bryce ferula (= *cordula* F.), July 3rd, c.

Aulocera proserpina (Schiff.) (= *circe* Fab.), E., July 24th, f.c.

Pararge achine, C., June 29th, s.

Limenitis populi, D., June 28th, f.c.

L. camilla (L.) (= *sibilla* L.), C., June 30th, c.

Apatura ilia, P., July 14th (1 only).

Coenonympha arcania, C., June 30th, a.

C. a. darwiniana, Sr., July 5th, a.; Lt., July 6th, a.

- Nymphalis polychloros*, E., July 24th (1 only).
Argynnis lathonia, Sr., July 10th (1 only, very small, 36 mm.).
A. cydippe, F., July 3rd, c.
A. ino, C., June 29th, c.
A. euphrosyne, Lt., July 6th, s.
A. daphne, F., July 3rd, c.
A. selene, D., June 28th, c.
Euphydryas maturna, C., June 29th, c.
Melitaea athalia, D., June 28th, c.
M. phoebe, F., July 3rd, c. ; Sr., July 4th, c.
M. diamina (Lang) (= *dictynna* Esp.), Lt., July 6th, c.
Thecla quercus, E., July 24th (1 only).
Strymon pruni, C., July 1st, f.c., worn.
S. spini, Db., July 26th (1 only).
Cupido minimus alsoides, Lt., July 7th, f.c.
Plebejus argus (L.), Sr., July 4th, f.c.
P. sephirus lycidas, Sr., July 4th, s.
Lycaeides calliopis (Boisd.) (= *argyrognomon* Auct.), Sr., July 4th, c.
Aricia agestis, Sr., July 5th, c.
A. a. allous, Sr., July 6th, c. ; Lt., July 7th, c.
Polyommatus meleager, M., July 14th, f.c. ; P., July 23rd, f.c.
P. eros (blue female), Z., July 20th (1 only).
Lysandra argester (Brgstr.) (= *hylas* Esp.), M., July 14th (1 only) ; Sr., July 6th (1 only).
L. escheri, Sr., July 4th, c.
L. bellargus ab. *striata*, Sr., July 6th (1 only).
Maculinea alcon, Cl., July 17th, c. locally (2 f. *nigra*).
M. arion, Cl., July 17th (1, with elongated and coalescent spots underside).
Scolitantides baton, Lt., July 6th, f.c. ; Sr., July 5th, f.c.
Celastrina argiolus, P., July 14th (1 only).
Pyrgus andromedae, G., July 13th, f.c.
P. cacialiae, Sr., July 10th, f.c. ; Gt., July 19th, c.
P. carlinae, Z., July 20th, c.
P. alveus, Z., July 20th, f.c.

THE SALE OF THE J. A. THOMPSON COLLECTION.—With reference to Mr. Rait-Smith's interesting and sympathetic article on the above, I should like to point out that owing to a misprint in the catalogue the name of my new subspecies of *Plebejus argus* has been recorded erroneously. The correct spelling of the name is *caernensis*, and not *caerensis*, as perpetrated by the printers and obviously copied by Mr. Rait-Smith.—J. ANTHONY THOMPSON ; Rhos School, Colwyn Bay.

XORIDES INDICATORIUS LATR. ? PARASITIC ON *LEIOPUS NEBULOSUS* L., AND A LIST OF OTHER SPECIES OF HYMENOPTEROUS PARASITES OF COLEOPTERA IN GREAT BRITAIN.

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

ON April 11th last, when stripping the bark from a chestnut log on a stack of wood in Windsor Forest, I found a number of burrows of the Longicorn-beetle *Leiopus nebulosus* L., containing young larvae of the same. In several of the burrows the cocoon of a hymenopterous parasite was present. These were taken home, and a male of *Xorides* (= *Xylonomus* Auct. nec Gravenhurst) ? *indicatorius* Latr., var., emerged from one of them on April 22nd. This is the first record of this species being taken in Britain, nor were any hosts known. I am indebted to Mr. J. F. Perkins for the name, and the information concerning this Ichneumon.

This seems a good opportunity to collect together a list of as many other hymenopterous parasites of Coleoptera as I can, which I have bred from, or taken with, beetles in the British Isles. I am indebted to Dr. Ferriere for kindly naming all the Chalcids for me.

CICINDELIDAE.

Cicindela germanica L.

Methoca ichneumonoides Latr.—♀♀ of this Mutilid were taken near, and inspecting, the burrows of the larvae of this Tiger-beetle at Blackgang Chine, I. of W., 17.viii.08.

STAPHYLINIDAE.

Myrmedonia collaris Pk.

Microcryptus nigrocinctus Gr.—♀♀ were taken with this species in a nest of the ant *Myrmica laevinodis* Nyl., at Wicken Fen, 22.viii.00. The ichneumon and the beetle are similarly coloured.

SILPHIDAE.

Liodes cinnamomea Pz.

Anectoclis subspinosus Kief.—A specimen of this parasitic cynipid, new to Britain, was bred, 6.xi.07, from truffles from Salisbury, full of this beetle and its larvae.

Alsiid sp. ?, ♀ Braconid, was bred with the above, xi.07.

COCCINELLIDAE.

Coccinella 7-punctata L.

Perilitus terminatus Nees.—A Braconid parasite of this ladybird taken at Rossbeigh, Co. Kerry, vi.02.

ANOBIIDAE.

Priobium castaneum F.

Calosota vernalis Curt.—A Chalcid taken in the burrows of this beetle, Darent Wood, 10.v.21.

Anobium domesticum Fourc.

Theocolax formiciformis West.—This Chalcid was taken emerging from the burrows of this furniture beetle in a setting-board at Seaton, Devon, on 2.viii.12. Another specimen emerged from the burrows of this beetle in an oak wardrobe at West Worthing, 11.vii.17. Probably the same species was bred from the *Anobium* burrows at Rye, viii.02.

Polyclistus mansuetor Gr.—This Ichneumon emerged from the beetle's burrows in the wardrobe at West Worthing, 27.vii.17.

Anobium denticolle Pz.

Hemiteles areator Pz.—A specimen of this Ichneumon was taken in the burrows of this beetle in hawthorn in Richmond Park, 10.iii.97.

Ernobius mollis L.

Doryctes striatellus Nees.—Braconid taken in the burrows of the beetle at Epping, 1.v.07.

Ptilinus pectinicornis L.

Calosota vernalis Curt.—Chalcid taken ovipositing in the burrows of this beetle in Epping Forest, 12.vi.07.

BOSTRYCHIDAE.

Bostrychus capucinus L.

Dryctes leucogaster Nees.—This beautiful Braconid was taken in the burrows of this species in oak boards at Millwall Docks, 23.vii.08. The beetle had been breeding there for several years.

LYCTIDAE.

Lyctus brunneus Steph.

Eubadizon pallidipes Nees.—A Braconid taken ovipositing in the borings of the beetle in a fence at Southfields, 9.vi.03.

Hecabolus sulcatus Curt.—♀ Braconid ovipositing in same fence, vi.04.

SPHINDIDAE.

Sphindus dubius Gyll.

Astichus arithmeticus Först.—A Chalcid taken in a fungus (*Reticularia lycoperdon*) with this beetle and its larvae, Windsor Forest, 25.ix.35.

Aphanogmus fasciipennis Th.—A Proctotrupid taken with the above at the same time. The first record for Britain in both cases.

CISIDÆ.

Cis sp. ?

Trigonoderus sp. ?—A Chalcid taken in fungus with a *Cis* at Wicken Fen, viii.13.

Cis boleti Scop.

Cephalonomia formiciformis West.—Proctotrupid taken in the burrows of the beetle in the fungus *Polystictus versicolor* in Epping Forest, 2.vii.07. Also with the same beetle in the fungus *Trametes gibbosa* in Windsor Forest, 17.xi.34.

Cis micans Hbst.

Astichus arithmeticus Först.—Bred from this beetle, Oxford, vii.12.

Cis pygmaeus Marsh.

Cephalonomia formiciformis West.—Taken on a tree infested by this *Cis* at Enfield, 2.vii.07.

CERAMBYCIDÆ.

Criocephalus rusticus L.

Odontomerus dentipes Gmel.—Several specimens of this Ichneumon taken in the burrows of the beetle at Nethy Bridge, 17.vi.11.

Tetropium gabrieli Weise.

Cubocephalus oviventris Grav.—This Ichneumon was dug out of the burrows of this longicorn in a larch tree at Market Bosworth, Leicestershire, 8.vii.04.

Callidium violaceum L.

Ephialtes manifestator L.—An Ichneumon taken ovipositing in the burrows of this beetle at Lyndhurst, 10.vi.97; and again in 1902.

Callidium variabile L.

Xylonomus precatorius F.—A cocoon of the Ichneumon was taken in the burrows of this beetle in Windsor Forest, 16.xii.29, and the parasite emerged 5.iv.30.

Rhagium indigator F.

Ischnocerus rusticus Fourc.—Ichneumon taken in a cell of this beetle at Rannoch, 12.vi.11.

Leptura scutellata F.

Histeromerus mystacinus Wesm.—Many ♂♂ and ♀♀ of this Braconid emerged from a mass of cocoons in the pupa of the beetle found at Epping Forest, 3.v.06.

Strangalia aurulenta F.

Histeromerus mystacinus Wexm.—Many ♂♂ and ♀♀ were found in a pupa of this longicorn dug out of a stump at Bovey Heathfield, Devon, 16.vii.29.

Strangalia 4-fasciata L.

Helcon ruspator L.—This fine Braconid, which was an addition to the British list, was taken in a cell of the beetle at Cannock Chase, 16.vii.10.

LAMIIDAE.

Leiopus nebulosus L.

Xorides indicatorius Latr. ? var.—Details as before given.

CHRYSOBELIDAE.

Timarcha tenebricosa F.

Euphorus pallidipes Curt.—A ♀ of this Braconid (and many pupae probably of the same species) emerged from the body of a live adult of this beetle, vi.08.

Galerucella sp. ?

Omphale sp. ?—Nine of this Chalcid emerged 22.viii.17 from a *Galerucella* larva found on a leaf at Woking, 17.viii.17.

Cassida nebulosa L.

Tetrastichus miser Nees.—Thirteen specimens of this little Chalcid emerged from a pupa of this *Cassida* taken by the late Miss Kirk and me at Wokingham, Berks, 6.ix.20. Again thirteen specimens emerged from another pupa taken by us near Waterbeach, Cambs, 22.viii.21.

Cassida equestris F.

Tetrastichus miser Nees.—Very many specimens emerged from a number of pupae of this beetle taken in Windsor Forest, 26.viii.31.

Entedon cassidarum Ratz.—A number of this Chalcid emerged from pupae of the same beetle from Windsor Forest, 16.x.31.

TENEBRIONIDAE.

Heledonia agaricola Hbst.

Pteromalus sp. ?—Twelve of a green Chalcid including ♂♂ and ♀♀ bred out from "Sulphur-bracket" fungus full of this beetle, taken in Windsor Forest, 21.ix.01.

MELANDRYIDAE.

Orchesia micans Pz.

Lissonota distincta Bridg.—I have twice bred this Ichneumon from *Polyporus hispidus* full of the larva of the beetle—Enfield, 18.ix.07, and Windsor Forest, 22.iv.20, emerged 1.vi.24. It appears, however, to be too large for the host, and Mr. Perkins tells me it is parasitic on Lepidopterous larvae.

Cremastus spectator Gr.—An Ichneumon bred from the same *Polyporus* containing many of the larvae of the beetle, New Forest, 24.v.08.

Meteorus obfuscatus Nees.—A Braconid bred in plenty from the same *Polyporus* full of the larvae of the beetle, Richmond, 16.iv.04.

CURCULIONIDAE.

Cionus sp. ?

Pezomachus sp.—Ichneumon, bred from a *Cionus* cocoon taken at Wokingham 13.ix.20, emerged 7.x.20.

Ceuthorrhynchus pleurostigma Marsh.

Sigalphus floricola Wesm.—♀ Braconid emerged from a cyst in a turnip (bought at Earls court) caused by this beetle, ii.00.

Calandra granaria L.

Lariophagus distinguendus Först.—A specimen of this Chalcid (which is parasitic on the *Calandra*) was taken at St. Albans, 19.iii.33. The first British record.

Rhopalomesites tardyi Curt.

Odontomerus dentipes Gmel.—This Ichneumon emerged, v.09, from elm wood containing this beetle, taken at Plymouth, 21.iv.09.

Rhyncolus lignarius Marsh.

Pteromalus deplanatus Nees.—This Chalcid, bred out from a thick stem of ivy full of this beetle from Windsor Forest, 2.iv.34.

Hemiteles areator Pz.—An Ichneumon of this species emerged from the same ivy stem.

SCOLYTIDAE.

Scolytus destructor Ol.

Coeloides scolyticida Wesm.—Several of this Braconid were bred from elm bark full of the larvae of this Scolytid taken in Windsor Forest, 21.viii.29. A ♀ was also taken ovipositing in the burrows of the beetle in Windsor Forest, 21.vii.31.

Scolytus pruni Ratz.

Entedon leucogramus Ratz.—A Chalcid bred from the borings of this beetle in apple tree, Enfield, 15.vi.06.

Scolytus rugulosus Ratz.

Rhaphitelus maculatus Walker.—A Chalcid bred from a pupa of this species, Leighton Buzzard, 15.v.06.

Scolytus multistriatus Marsh.

Entedon leucogramma Ratz.—Specimens of this Chalcid emerged from the burrows of this Scolytid in elm bark from Windsor Forest on 5 and 10.viii.31, and 27.v.36, 21.ix.36.

Hylastes palliatus Gyll.

A Chalcid taken in the burrows of this beetle, Nethy Bridge, 23.vii.07.

Hylesinus crenatus F.

Coeloides filiformis Ratz.—This Braconid was taken ovipositing in the burrows of the beetle, Windsor Forest, 29.vi.31.

Hylesinus fraxini Pz.

Cerocephala corniger West.—This Chalcid was taken in the burrows of the *Hylesinus* in ash poles at West Worthing, 13.vi.17.

Cheilopachus colon L., ♂, and *Eurytoma auricoma* Mayr. ♀.—Two Chalcids were bred in some numbers from pupae of the beetle, Enfield, 3.v.06.

Bracon caudatus Ratz.—Both sexes of the Braconid bred in company with the above.

Bracon longicaudis Ratz.—This Braconid, which was new to Britain, was obtained from the same source.

Dinotus bidentatus Th.—♂ Chalcid emerged from a pupa of this beetle, Leighton Buzzard, 15.v.06.

Tomicus nigrinus Gyll.

Dendrosoter protruberans Nees.—Emerges from the burrows of this beetle in larch bark, Windsor Forest, 24.iii.33. It was the first British record for this Braconid. My friend Mr. Hanson, however, tells me he had taken it at an earlier date.

Platygaster affinis Walker, Chalcid, and *Perilitus* sp. ? Braconid were also bred from the same source, 19.iv.33.

Trypodendron domesticum L.

Rhopalicus sp. ?—A ♂ of this Chalcid was dug out of the burrows of the beetle in the New Forest, 30.v.10.

Some of the above-mentioned hymenopterous parasites will be found recorded in the following literature :

DONISTHORPE, H. StJ. K. (1901).—"Cases of Protective Resemblance, Mimicry, etc., in the British Coleoptera," *Trans. Ent. Soc. Lond.*, Pt. III, 345-77.

Idem (1906).—"Cubocephalus nigriventris" Thoms., parasitic on *Tetropium*," *Ent. Mo. Mag.*, 42 : 41.

Idem (1907).—"Cephalonomia formiciformis," *Ent. Record*, 19 : 260.

Idem (1929).—"Histeromeres mystacinus" Wesm., a Coleopterous Parasite," *ibid.*, 41 : 125.

Idem (1931).—"Tetrastichus miser" Nees, a Chalcid Parasitic on Species of *Cassida*," *ibid.*, 43 : 70.

Idem (1933).—"Dendrosoter protruberans" Nees (*Dorychinae*, *Braconidae*), a Species of Hymenoptera Parasitica New to Britain," *Ent. Mo. Mag.*, 66 : 153.

Idem (1935).—"Astichus arithmeticus" Först., and *Aphanogmus fasciipennis* Thoms., Two Species of Hymenoptera Parasitica from Windsor Forest New to Britain," *ibid.*, 71 : 256.

ELLIOTT, E. A., and MORLEY, CLAUDE (1907).—"On the Hymenopterous Parasites of Coleoptera," *Trans. Ent. Soc. Lond.*, Pt. I, 7-75.

Idem (1911).—"On the Hymenopterous Parasites of Coleoptera," First Supplement, *ibid.*, Pt. 2, 453-96.

NOTES AND OBSERVATIONS.

AGLAIS URTICAE IN NOVEMBER.—On Wednesday, November 22nd, 1939, I saw an *Aglais urticae* flying across the green at Sidcup in the bright sunshine about 11.30. It is a late date for this butterfly to be on the wing.—S. F. P. BLYTH ; Cleveleland, Chislehurst.

ACHERONTIA ATROPOS IN CHESHIRE.—A friend, Mr. S. Gordon-Smith, obtained two full-fed larvae of *Acherontia atropos* at the end of September, 1939, at Raby, The Wirral, Cheshire, from a potato field within a few hundred yards of the spot where I obtained others in 1938 (see 1939 *Entom.*, 73 : 26). I might add that I have since seen the pupae.—B. B. SNELL ; Woodsome, Bromborough, Cheshire.

ASSOCIATION OF ANTS WITH LYCAENID LARVAE.—Is there any evidence to show that the attendance of ants on the larvae of certain butterflies is beneficial or otherwise ? I have reared numbers of

Lycaenid larvae, both with and without the aid of ants, and I think I might safely say that I have had better results when ants have not been introduced. An experience recently may have some bearing on the point. In a South Hants locality, where during recent years *Lysandra coridon* has been in abundance, last season (1938) there was a very considerable decrease in numbers, and it appeared that the colony was about to experience decline permanently, as has happened in so many localities. I paid several visits at different dates, and found no improvement in numbers. On visiting the place in 1939, much to my surprise I found that the colony had almost regained its former abundance, and this was the first instance in which I had found a failing colony of the species so rapidly regaining its former abundance. I noticed that most of the ant-heaps on the down had been disturbed, and on asking the keepers what had happened to them, I was told that in the previous May most of the ant-heaps had been dug into, and large numbers of eggs taken to feed young game birds. All the keepers, and a shepherd, had remarked on the scarcity of the blue butterflies during the previous year. I may add that the shooting is very strictly preserved and no collectors have access to the ground. It would appear that the decimation of the ant colony may have been favourable to the butterfly.—S. G. CASTLE RUSSELL; "Cotswold", Lyndhurst, Hants.

LAPHYGMA EXIGUA ON HACKNEY MARSHES.—I captured a male of this species at light in the above locality on October 16th last. This seems to be about the only record for 1939.—E. W. CLASSEY; 141, Portnall Road, Maida Hill, W. 9.

SUBSCRIPTIONS.—It is almost certain that the costs of publishing *The Entomologist* will be increased owing to the war, and with its finances not of an order that allows of liberties to be taken with them, it would be of very material assistance if all subscribers would send in their subscriptions as quickly as possible. At present there is no intention of raising subscriptions or cutting costs by reducing the size of the magazine, but unless prompt payment is received this policy may have to be revised. Will those few subscribers, too, who have not yet paid for last year kindly take and act upon this hint.—N. D. RILEY.

MIGRATION RECORDS FOR 1939 (*Entom.*, 72 : 273).—As I had to pay several visits to the South-east coast this year, the following notes may be of interest:

Eastbourne.—June 9th. Fine day, but a strong East wind. A few *Vanessa cardui* and *Plutella maculipennis*.

Dungeness.—June 23rd–25th. Strong East wind. *Plutella maculipennis* in thousands and large numbers of *Tortrix viridana*. The latter sitting about on posts and broom bushes. It appeared improbable that *T. viridana* had come from inland against the wind so it must be assumed that they had migrated with the *P. maculipennis*.

A few *V. cardui*, *Plusia gamma* and *Macroglossum stellatarum* were seen.

Eastbourne.—July 11th. Fine day. Strong N.W. wind. Several specimens of *M. stellatarum*, *P. gamma* and *V. cardui* were noticed, also numbers of *Pieris brassicae*, *P. napi* and *P. rapae*.

August 16th. Fine day, very warm, East wind; vast numbers of *P. brassicae* everywhere.

Dungeness.—August 25th–27th. Wind N.E., with sea fog. *P. gamma* plentiful and a few *P. maculipennis*, both probably the progeny of the earlier migration.

Eastbourne.—September, 1939. Thousands of larvae of *P. brassicae* on the allotments crawling up the sheds and fences, but many of those pupating were parasitized.—H. M. EDELSTEN.

MIGRATING BUTTERFLIES IN CAITHNESS.—On September 24th, 1939, I obtained evidence of at least two species of butterflies migrating, for on that day I saw some *Pieris rapae* and a *Nymphalis io*, both species which I have not seen here before. On the same day a *Lycæna phlaeas* was noticed. There is a distinct possibility that this was also a migrant, as I saw no sign of an earlier brood, though I kept a careful watch. Unfortunately the 25th was a dull day, but on the 26th two more *phlaeas* were seen and also a *Pieris brassicae*, which I have no doubt was an immigrant. During the succeeding days more *brassicae* of both sexes were seen, the last being on October 3rd.—SINCLAIR SWANSON; Keiss Village, Wick, Caithness.

A CURIOUS FOOD-PLANT FOR ABRAXAS GROSSULARIATA.—As is fairly well known, the food-plant of *Abraxas grossulariata* in the Western Islands is practically always Common Heather (*Calluna vulgaris*), although records exist for its attacking *Cotyledon umbilicus*. This year we visited the precipitous island of Muldoanich, where *Abraxas* was common enough, and no doubt for the most part attached to heather. In one terrible looking ravine, just where further explorations in that particular direction became impossible, I was amazed to find quite a number of females ovipositing on the Roseroot (*Sedum roseum*).—J. W. HESLOP HARRISON; King's College, University of Durham, Newcastle upon Tyne.

RECENT LITERATURE.

British Blood-sucking Flies. By F. W. EDWARDS, H. OLDROYD and J. SMART.

The authorities of the British Museum have recently published a volume on British blood-sucking flies. It consists of three parts, Mosquitoes, Midges, etc., by F. W. Edwards, Tabanidae (clegs) by H. Oldroyd, and biting Muscidae and so-called Pupipara by J. Smart. The book therefore contains every fly known to suck the blood of mammals or birds in Britain. The work was originally planned some years ago by the late Major E. E. Austen, and indeed, to some extent, replaces his *Illustrations of British Blood-sucking*

Flies, which was published by the Museum more than thirty years ago. Since that date there has been an enormous increase in our knowledge of the biology of these insects and even in the number of species on the British list; for instance, the number of mosquitoes has increased from 16-29, and the Tabanidae from 22-28; as to the midges and such things, our knowledge of them was so indefinite in 1906 that it is difficult to say how many species were then recognized as British.

The purpose of this new work, to quote from its introduction, is "to provide in the simplest manner information of interest to non-specialists; technical terms are as far as possible avoided, and no attempt has been made to give full descriptions of the insects". Each section has been given a valuable general introduction which summarizes what we know of the life-histories of the insects and of their medical or veterinary importance. Those who have no particular knowledge of the Diptera will appreciate these introductions: we believe that they will commend themselves to medical officers of health, who are beginning to feel that they must give more attention to biting insects than they have done in the past. The general reader will also value the short list of references which concludes the account of each family and which has been selected with great judgment. The text-figures direct attention to points that are of importance in classification and have a considerable general value, apart from their particular purpose in leading to precise identification. The numerous coloured plates of Tabanidae are exceptionally good, those of mosquitoes not perhaps up to the same standard.

P. A. B.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 27th, 1939.*—Held at the rooms of the Royal Entomological Society of London, 41, Queen's Gate, S.W. 7, Dr. E. A. Cockayne, Vice-President, in the Chair.—Dr. Cockayne exhibited an example of *Miana versicolor* from the Forest of Dean; Mr. Jacobs, an example of *Bupalus piniaria* L. with much restricted light areas on all wings; Mr. J. O. T. Howard, moths bred from larvae taken in Delamere Forest at Easter, including dark green and dark brown *Triphaena fimbria*, a dark grey *Aplecta nebulosa* and the melanic ab. *nigricata* of *Boarmia repandata*; Mr. E. E. Syms, larvae of *Sylpha sylvestris*, and ova of a hemipteron from which parasitic flies were emerging; Dr. Chas. Baron de Worms, larvae of *Palimpsestis* or, *P. octogesima*, *Acronicta tridens*, *A. rumicis*, etc.; Mr. T. R. Eagles, larvae of *Pterostoma palpina*, and a larva of *Laspeyresia pomonella* found in a box of apples from British Columbia. Mr. L. T. Ford read a paper on Breeding and Setting Micro-lepidoptera.

August 10th, 1939.—Dr. K. G. Blair in the Chair.—The decease of Mr. A. E. Tonge, for many years Treasurer of the Society, was reported. The names of three new members were announced. Mr. R. F. Haynes exhibited (1) An aberration of *Abraxas grossulariata*,

(2) a gynandromorphous example of *Amorpha populi*, and (3) larvae of *Theretra porcellus*; Mr. A. Bliss, specimens of *Zygaena meliloti* from the New Forest area, and a form of *Hydriomena coerulata* (*impluviata*); Dr. G. V. Bull, *Apamia gemina* from Ryde; Mr. H. Moore, a female *Ectobius lappona* with its brown oötheca. Preliminary reports were made on the Field Meetings held at Darenth Wood, New Forest, Benfleet, Wendover, Clandon and Boxhill. A discussion took place on the assembling of *Lasiocampa quercus*. Information was given by the Secretary of the position and facilities of the proposed new meeting-rooms near London Bridge.—HY. J. TURNER (*Hon. Editor of Proceedings*).

OBITUARY.

W. M. CHRISTY, M.A., F.L.S., F.Z.S., F.R.E.S.

William Miller Christy was born on January 24th, 1863, and died on August 20th, 1939. Educated at Eton and Christ Church, Oxford, he was called to the Bar in 1890, but never practised. Always interested in the study of Insects and Birds, he was elected a Fellow of the Royal Entomological Society of London in 1889. He contributed many interesting records to *The Entomologist* between 1890 and 1913. Among his communications was a description of a moth trap designed by himself, with which he was very successful. Probably his most interesting capture in it was the first recorded specimen for Britain of *Polychrisia moneta* Fab. (*Entom.*, **23**: 254, 287). Christy was an enthusiastic stalker, and while in Scotland rediscovered *Poecilopsis lapponaria* Bdv. (*Entom.*, **28**: 163, 237). He captured other scarce species such as *Coenocalpe lapidata* Hubn. and *Apamea exilis* ab. *assimilis* Doubldy., and had a remarkable race of the White Ermine *Spilosoma lubricipeda* Lin. from Morayshire. *Oporinia christyi* Prout was named after him by Prout from specimens captured by Christy near Rannoch. In 1893 Christy discovered on his property in Sussex a colony of *Zygaena trifolii* Esp. in which the yellow aberration *lutescens* Cockerell occurred very freely (*Entom.*, **26**: 200), only to die out very soon afterwards.

Christy owned a portion of Wicken Fen, which he afterwards made over to the National Trust. One of the droves, "Christy's Drove", is named after him. He was keenly interested in all matters concerning the Fen, and was for many years a generous contributor to the fund raised by entomologists to assist in its upkeep; he also gave a handsome donation to the Royal Entomological Society's Premises Fund. He was a captain in the Sussex Imperial Yeomanry in 1902-5 and was one of the finest game shots in the country. In later years he rather dropped active entomology and became an enthusiastic horticulturist. His collection of British Lepidoptera, together with his diaries, manuscripts, etc., and a bequest of £250 to defray the expenses to which the Trustees may be put in removing and installing them, have been left to the British Museum (Natural History).—H. M. EDELSTEN.

THE ENTOMOLOGIST.

VOL. LXXIII.]

FEBRUARY, 1940.

[No. 921]

THE OCCURRENCE IN BRITAIN OF *EUPREPIA CRIBRARIA* L., f. *ARENARIA* LEMPKE (LEP. ARCTIINAE).

By A. J. L. BOWES.

It is well known that British examples of *E. cribraria* are considered to be referable one and all to f. *bivittata* South (1909) (with which f. *anglica* Obth. (1911) and f. *pseudobifasciata* Dannehl (1919) appear to be synonymous), being distinguished from the type by the two transverse black vittae on the fore wings. And it is certain that all specimens so far taken in the very confined localities inhabited by the species in Hants and Dorset are f. *bivittata*.

It is, then, of some interest to discover that certainly two, possibly three, specimens which are not of this form have occurred in Britain, in places well away from the Bournemouth district. These specimens are :

(1) A male, without data, in Dr. E. A. Cockayne's collection. Dr. Cockayne writes : "I think it is British ; it came from old Williams's collection, and his things were reliable, though none were labelled."

(2) A male, taken by Mr. R. P. Demuth at light on Dungeness, Kent, July 21st, 1934.

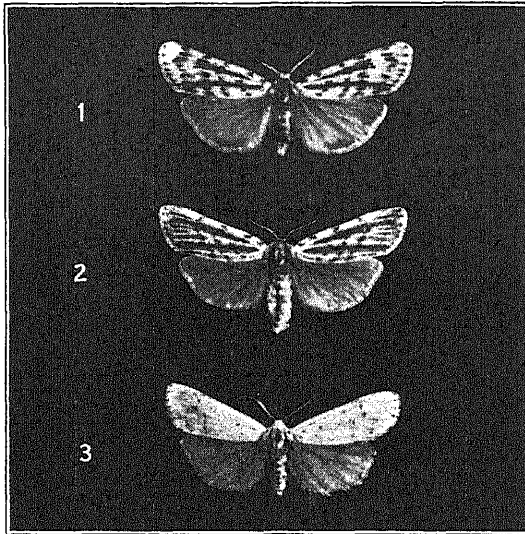
(3) A male, taken by myself at light at Sandwich Bay, Kent, August 7th, 1937.

All these three are referable to f. *arenaria* Lempke, which is described and figured in *Lambillionea*, 1937, p. 150, pl. x, figs. 5 and 6. For the sake of convenience I reprint the description here :

"En général, la race est plus petite que la race *anglica* Obth. Les ailes antérieures sont blanches, traversées par des rangées de points noirs fins dont le nombre a fréquemment une forte tendance à se réduire : c'est ainsi qu'il se rencontre parfois des exemplaires ne possédant que les deux points discocellulaires, il arrive même, mais rarement, que les ailes antérieures sont complètement blanches (ab. *unicolor* Closs, *Ent. Z.*, vol. 10, p. 39 (1916)). Les ailes postérieures, parfois de couleur gris foncé uniforme, ont le plus souvent la moitié basale, voire même une plus grande partie, du couleur gris pâle traversée par des stries foncées allongeant les nervures."

It should, in passing, be emphasized that *f. arenaria* is not to be confused with *f. punctigera* Fr. (*N. Beitr.*, 2 : 76, pl. 140, fig. 1 (1834)), with which it has previously been classed on the Continent.

M. Lempke's article, lucid and illuminating, deals with the races of *E. cribraria* which occur on the sand-dunes and on the heather of Holland and Belgium. In these two countries, *f. arenaria* occurs freely on the sand-dunes, and has been taken regularly at La Panne (France, Nord). Further, M. Lempke



Euprepia cribraria L. Figs. 1 and 2 are a pair of typical *f. bivittata* South; fig. 3 a male of *f. arenaria* Lempke.

says, in a letter to me, that single examples of *arenaria* occur to him rarely (so far only males) among the heather race *bivittata*.

I do not think that with the evidence we have it is possible to judge whether *arenaria* is indigenous with us. M. Lempke has not yet found the food-plant of *arenaria* on the dunes, but *E. cribraria* is a wide feeder—heather, lettuce, dandelion, lichens and various grasses; and I have no doubt that even the desolation of Dungeness would provide something acceptable. I am inclined to think, however, that there is a migratory streak in this insect, and that both our isolated specimens (from well-worked localities) and the casual males of *arenaria* occurring among *bivittata* are wanderers from the headquarters of the race on the Dutch and Belgian sand-dunes.

The text-figure shows a pair of typical *bivittata* from Dorset (figs. 1 and 2), and my Sandwich *arenaria* (fig. 3), which will be seen to be almost spotless, thus being well on the way to *unicolor*. Dr. Cockayne's and Mr. Demuth's examples are rather more noticeably spotted and conform more closely to M. Lempke's type of *arenaria*.

I am indebted to M. Lempke for kind help, no less to Dr. Cockayne and Mr. Demuth for particulars of their specimens, and to Mr. T. A. Bennett for an excellent photograph.

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 Herne Bay ;
 May, 1939.
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AESHNA CYANEA MULL. IN NOVEMBER.—At Wood Walton Fen, Hunts, on November 12th a male of this dragonfly was captured flying in the sunshine along one of the rides. Miss Longfield in her book gives the end of October as the latest date. A battered specimen of *Nymphalis io* L. was also observed.—H. M. EDELSTEN and J. C. F. FRYER.

EUMENIS SEMELE AT FLOWERS.—Since the Grayling (*Eumenis semele*) is popularly supposed not to visit flowers for purposes of refreshment, it may be of interest that, on September 8, 1939, I found a very worn male imbibing the nectar of white phlox in my garden. It was so absorbed in the business on hand as to allow me to capture it quite easily without the aid of a net.—PETER MICHAEL ; Davena, 56, Cranmore Lane, Aldershot, Hants.

BREEDING BUTTERFLIES TO LIBERATE IN GARDENS.—Mr. Newman (*Entom.*, 72 : 293) misunderstands the objection of naturalists to the "planting out" of natural objects. It is not only rare migrants which are affected ; even worse is the unreliability of local records of common species. To one who, like myself, has worked for forty years on "local lists" of various localities, the artificial introduction of species—even such as are known to be native to the place—is extremely annoying. *Limenitis camilla* turns up in Sutton and I do not believe it to be native to the district. *Argynnis aglaja* is reported, and I have to be in doubt. Well did H. C. Watson, in *Topographical Botany*, call the practice a "reprehensible experiment."—C. I. PATON ; "Ormley," 7, Cavendish Road, Sutton, Surrey.

A NEW BRITISH VARIETY OF *LYCIA HIRTARIA* CLERCK
(LEPIDOPTERA GEOMETRIDAE).

BY C. N. HAWKINS, F.R.E.S.

Lycia hirtaria ab. *denigrata* ab. nov.

This form is characterized by the complete absence of all *black* scaling on head, thorax, abdomen, antennae, legs and wings. The normal pattern is present, but is shown by a darker shade of the ground-colour only.

Type male bred March 2, 1938, Wandsworth Common; *para-types*, two males, bred April 6 and 15, 1938, respectively, same locality.

The ground-colour varies as in normal specimens of the species. In the type specimen it is ochreous-buff, while in the paratypes it is grey-brown. The absence of black scaling deprives this form of much of the usual speckled appearance of the thorax and of the contrast between the cross lines and ground-colour on the wings, thus giving the insects a peculiar washed-out appearance.

The type was bred on March 2, 1938, and the paratypes on April 6 and 15, 1938, respectively, from amongst a brood of some 60 males and 40 females. No females of the form were bred. The parents were reared from larvae, probably of the same batch, found on poplar at Wandsworth Common on June 17, 1936. The female parent was rather unusually dark and the male parent was a well-marked specimen with buff ground-colour. A pairing was obtained between one of the paratypes and a female of the same brood and a large number of eggs were laid, but unfortunately all proved to be infertile, so that beyond a suggestion that this form is a multiple-gene recessive, nothing can be said about its genetics. This aberration seems to be distinctly uncommon, though a few specimens which I believe to be referable to it have been taken by other collectors at different places at various times. So far as I am aware these latter specimens are all males also, and the female of this form (if it exists) appears to be unknown.

VARIATION OF *MANIOLA JURTINA*.—On July 27, 1939, I netted a specimen of *M. jurtina* at South Hayling, Hants, which proved to be a variation of the male. The apical spot was elongated and bipupillate, while most of the fore wings was shaded with typical orange, but most of the orange immediately surrounding the apical spot was replaced by bright ochreous yellow. The wings were suffused with pale parchment brown, commencing from the margin of the wings, and the sub-apical patch was broken into three distinct patches.—R. S. BYLES; 49, Central Road, Wembley, Middlesex.

MIGRATION RECORDS, 1939.

BY CAPT. T. DANNREUTHER, R.N.

THE general summary of migration records for 1939, as printed in *Entom.*, 72 : 273-283, is here supplemented by a table of estimates of district abundance for comparison with previous years, using symbols explained in *Entom.*, 67 : 14.

TABLE OF COMPARATIVE ESTIMATES OF ABUNDANCE IN 1939.

Species.	England and Wales.						Scotland.	Ireland.
	S.W.	S.E.	W.	E.	N.W.	N.E.		
<i>Vanessa cardui</i>	VC*+	VC*+	FC	FC—	C*	R	FR	C
<i>V. atalanta</i>	C—*	C—	FC	FC—	R	R	R	FC
<i>Colias croceus</i>	R—	R—	nil	nil	R	nil	nil	R
<i>C. hyale</i>	nil	nil—	nil	nil	nil	nil	nil	nil
<i>A. atropos</i>	nil	C*	nil	R—	R	nil	R	nil
<i>H. convolvuli</i>	R	R	R	R	R	nil	R	R
<i>M. stellatarum</i>	FR—	FR	R	nil—	R	nil	nil	R
<i>Plusia gamma</i>	VC*	VC*	FR—	FC—	FC	FR	FR	FC
<i>N. noctuella</i>	R	nil	nil	nil	FR	nil	nil	C
<i>A. urticae</i> †	C+	VC*	FC	C	FC	FC	FC	C
<i>Nymphalis io</i> †	C+	C	FC	FR—	R	R	R+	FR

* Denotes only found very locally in such abundance.

† Control insects added from scheduled observations.

II. Notes and Additions to General Summary, 1939.

The schedules generally show that for every ten of the control *A. urticae* recorded, the single *V. atalanta* reported in the spring increased to four in the south in the autumn; but there was no such corresponding increase in the five spring *V. cardui*.

With reference to (11) on p. 274 of *Entom.*, 72, at the same period, June 23 to 25, as a swarm of over a thousand *Tortrix viridana* appeared up the beach at Hastings, "large numbers" also appeared at Dungeness "sitting about on posts and broom bushes." A strong east wind was blowing. (H. M. Edelsten.) (*Entom.*, 73:21.)

With reference to (20), p. 275, further reports from many Provincial Advisory Entomologists confirm the severe damage to crucifers caused by the larvae of *Pieris brassicae* and *P. rapae*, species earlier reported reinforced considerably by immigration. Only in the north was damage limited to the normal 10 per cent. In some localities in the south the attack was the most severe experienced for about 20 years and, where the larvae were not removed by hand picking or destroyed by Derris preparations, leaves were stripped to the ribs. The damage in places extended to cabbages, cauliflowers, broccoli, sprouts, turnips, swedes, sugar beet and horse-radish in market gardens; and in flower gardens the nasturtiums, stocks and even Siberian wallflowers were eaten. Larvae could be found as late as the end of October. Nevertheless, at least in the Reading Province, "judging from the amount of parasitism present, a severe outbreak early next year is unlikely."

With reference to (23), p. 276, a similar report of a flock of butterflies, mostly *P. brassicae*, flying north-west, was received from allotment holders situated on the hills half a mile inland at Hastings. Between 11 a.m. and noon on August 8 hundreds passed "like a snowstorm lasting five or ten minutes." (D. Brightmore.)

Add to list of migrations: (32) September 3 to 10. At St. Austell, S. Cornwall, about midday on the 3rd some 200 *Vanessa cardui* assembled to feed on the yellow flowers of *Helenium* in coastal gardens and remained for some days, but only two were left on the 10th. They were certainly immigrants as five to ten were watched coming in from the sea flying north singly. (G. D. Rowley.) (See *Entom.*, 72 : 292.)

III. Further Notes on other Immigrant Insects recorded.

Danaus plexippus: (This note amends that on p. 281, *Entom.*, 72). The only report received in 1939 was of a specimen captured some hundred or more miles off the Azores at noon on September 25 in an easterly breeze. It was taken on board the "Duchess of Richmond" then in a 13-knot convoy from Quebec and Halifax on a 21-day voyage to Liverpool. The specimen was recognized by J. A. R. Bromage, who states that he saw none of this species in Canada before sailing, and that the cargo loaded there consisted of boxed cornflakes and metals.

Vanessa cardui: The 1939 record cards and schedules now in hand show over 4500 present in the British Isles during the season, as compared with only 770 in 1938 (*Entom.*, 72 : 12). Heavy rains appear to have destroyed many larvae bred both here and in France, and, though "quite numerous" at Bradford in September, few specimens reached the north of England or Scotland. It was last recorded at Brighton on October 23. A couple taken by F. W. Jeffery at Oreston (Plymouth) on August 23 paired in captivity and produced between 250 and 300 eggs, which were reared and pupated on October 30. The male died ten days after pairing, but the female lived for a month and still had a few eggs left at death.

Vanessa atalanta: Only 950 were recorded and these mostly in the south in the autumn, as compared with 2400 in the 1938 season. The last specimen was seen in Dublin on October 27.

Colias croceus: About 100 were recorded in 1939, compared with 3300 in the "Clouded Yellow Year" of 1938. A female was taken in the Isle of Man on September 11. The last two were seen at Plymouth on October 21 and near Chichester on the 22nd.

Acherontia atropos: Only four wild moths were captured, as compared with 25 in 1938. The fourth was picked up dead at Shipley (Yorks) on July 18 (W. Webster). Larvae were common

in West Sussex, and pupae were collected at Raby (Cheshire) and Holbeach (Lincs) in November.

Herse convolvuli : A dozen moths were seen in 1939, as in 1938 and ten in 1937. The last, a female, was captured at Hastings on October 14. They ranged up to Scotland, the Isle of Man, and in Ireland up to Dublin on September 25. (*I. J. N.*, p. 214.)

Macroglossum stellatarum : About 40 seen compared with 75 in 1938 and 150 in 1937. The range extended to the Firth of Forth and Dublin. Last seen at Poole on October 19. Two larvae, half-grown, were found on September 17 on Bedstraw plants on the seashore at Woolacombe (N. Devon). (G. D. Rowley.)

Plusia gamma : In 1938 the species was relatively scarce, only 1600 being recorded. In 1939 over 14,000 were reported, and this figure is an under-estimate, as night observation was restricted. The Covered Parade at Hastings was the only place where a nightly watch had been kept, and even these counts had to be abandoned on August 25, when at a maximum of about 2000. At Stroud (Glos.) on the night of September 6 a maximum of 200 was recorded, but the number dropped to 60 next day. The large numbers were confined to August—over 10,000—with less than 600 in any other month, and few remained through September. The last to be seen was a fresh specimen at Bath, by Canon L. W. Grensted, on December 12, when the temperature was registered as maximum 48·7° F. and minimum 36·6°, but had been as low as 25·2° on the 8th (the date last seen at Eastbourne in 1938). In several localities the species was unrecorded or very scarce ; but the range extended to the north of Scotland as usual.

Nomophila noctuella : Small numbers were recorded by only six observers with no evidence of immigration ; Mrs. G. E. Lucas recorded 53 at Timoleague (Co. Cork), where it was last seen on October 11.

Plutella maculipennis : On June 9 a few were seen at Eastbourne. Thousands appeared at Dungeness in a strong east wind, June 23 to 25, suggesting an immigration, and there were also a few present on August 25 to 27, probably their progeny (*Entom.*, **73** : 21). The species was fairly common near Dublin, but unrecorded elsewhere except for a few in the Midlands.

Celerio galii : At Sutton Bonington (Leics.), larvae were found "in abundance" in the Agricultural College Gardens on Clarkia and Godetia. (A. Roebuck.)

Leucania unipuncta : A female was taken at light at Timoleague on November 12. (Mrs. G. E. Lucas.)

Laphygma exigua : A male was taken on Hackney Marshes at light on October 16. No other records for 1939, though over 300 were seen in 1938. (Compare *Entom.*, **73** : 21 with **72** : 15).

Plusia interrogationis: A specimen was observed in East Tyrone at dusk in July flying around the Marsh Thistle, *Cnicus palustris*, and was said to feed on *Calluna*. (T. Greer.) (*Entom.*, 73:4.)

A dozen of the rarer vagrants listed for observation were unrecorded in 1939, including the Hawk Moths, except for a larva of *Celerio euphorbiae* (see *Entom.*, 72:260) and those of *C. galii* mentioned above.

IV. Notes on the Use of Schedules of Daily Observations.

In 1939 schedules were kept by observers at 16 places in the South-eastern district of England, 6 in the South-western district and South Eire. In the Midlands and North only one or two in each district, but none came from North-east England, whence Dr. F. C. Garrett reported "migrants were almost absent, though *P. brassicae* was very abundant."

In view of war occupation and lighting restrictions it will now be impracticable to obtain records upon the same scale as in recent years, though it is hoped that any migratory movement upon an exceptional scale will be reported by posting a record card. Circumstances will enhance the importance of the schedules kept by resident observers, and an appeal is made to County Recorders to enlist at least one or two volunteers to keep them in each county. In towns the Superintendent of Parks and Gardens can generally arrange for this, and in the country the Science Masters of public and grammar schools are generally willing to arrange for a group of students to keep a schedule collectively. (Forms, with a leaflet on their use, can be had on application to the Hon. Sec., Insect Immigration Committee, "Windycroft," Hastings.)

When it is obvious, from the number of days on which either of the control insects was recorded without seeing a migrant, that the paucity of records is due to lack of insects and not to lack of observation, even the crude totals of the entries for 1939 gives useful information, as the following five kept in widely separated localities will show at a glance:

CRUDE TOTALS OF INSECTS RECORDED ON SCHEDULES IN 1939.

County.	Migrants.			Controls.		Place.
	<i>P. cardui</i> .	<i>V. atalanta</i> .	<i>P. gamma</i> .	<i>A. urticae</i> .	<i>N. io</i> .	
Caithness	20	9	67	215	1	Keiss Village.
Norfolk	3	11	2	180	60	Wendling.
Sussex	472	196	7712	469	73	Hastings.
Gloucester	176	60	804	1067	262	Stroud.
Cork (Eire)	54	38	23	372	37	Timoleague.

At Keiss Village kept by Sinclair Swanson; Wendling by A. H. Turner; Hastings by Capt. T. Dannreuther and H. G. Macleod; Stroud by Fleet-Payr. T. Bainbridge Fletcher; Timoleague by Mrs. G. E. Lucas.

The migration details given in the 1939 summary indicate that corresponding schedules missing for the Isle of Wight and Devonshire

might confirm or refute the suggestion that these figures indicate a progressive diminution of migrants from east to west as well as the usual drop to the north of the British Isles. This can only be determined on analysis of all the records upon graphs and maps. In such crude totals as quoted allowance must be made for no two observers adopting the same method or period of observation, apart from changing weather conditions and the duplication of records of stationary insects. Nevertheless, each schedule shows when a species was first observed and the maximum numbers of each brood recorded, with dates that can be transferred to graphs based upon a logarithmic scale for each latitude degree. It is from the interpretation of such graphs, for each species and from year to year, that we hope to learn something more about what migration is and how it works.

"Windycroft," Hastings,
January 25, 1940.

STRIDULATION IN *NYMPHALIS IO*.—The question as to whether stridulation in *Nymphalis io* is a conscious choice or a reflex action is naturally no easy one to answer with any certainty. In the *Entom.*, Nov., 1939, Mr. G. H. Gopsill gives criticisms of the theory of "conscious choice"—criticisms with which, in the main, I agree. He omits a strong point in favour of the reflex theory however, by neglecting the mechanism by which the sound is produced. According to Frohawk the noise produced is a "hissing" one caused by the rubbing of the very hairy wings together. The essential point to note is that wing movement produces the noise. The reaction of the butterfly to danger, when in the torpid state, is thus one of wing movement. Now when the butterfly is in the active state, the reaction to danger is again one of wing movement, in this case manifesting itself as flight. The same reflex arc could thus be used in both active and torpid states, viz: Special sense organs → brains → effector organ (wing muscles in both cases)! In view of the above arguments there is no need for any conscious activity in deciding the course of action to be taken under the different conditions. A reflex reaction to danger is always much quicker than one which has to be thought out—this is general and does not apply only to insects. When an object approaches our eye we do not think about blinking—it happens almost before we are aware of the object.

I would also like to point out that the stridulation is not confined to the torpid state. If an active *io* is released to fly about a quiet room, a distinct intermittent "hissing" not dissimilar to the stridulation is produced.

I think one must look upon the wing movement of the insect when in the torpid condition as an attempted flight—actual flight being impossible because of the general stiffness and lethargy. The noise produced is purely incidental.—NEVILLE L. BIRKETT, B.A.; The Cottage, Kilner Park, Ulverston.

A COLLECTING TRIP TO SCOTLAND (AUGUST, 1939).

BY C. G. M. DE WORMS, PH.D., F.R.E.S.

THOUGH I had visited Scotland during many periods of the collecting season, I had never been there for the main part of August. I considered it, therefore, a profitable moment to carry out a trip at this time of the year, while the going was good. Accordingly, I set out on July 30, by road, my first halt being at Leicester, where Dr. A. Lisney once more kindly entertained me. There were plenty of insects that night at sugar, but nothing out of the ordinary, except melanic *Xylophasia monoglypha* and dark grey *Aplecta nebulosa*. Proceeding on the 31st, across country, I spent a couple of hours in Burnt Wood, where, by dint of much searching, I managed to find a few *Eupithoea debiliata*, somewhat worn, sitting on the bilberry. *Lygris populata* was readily disturbed from the trunks, as also was a host of *Hydriomena furcata*, mostly the dark form. I then continued my journey northwards to Formby, near which along the coastal road *Stilpnotia salicis* was to be seen just emerged. That evening I accompanied Mr. Fraser and his family to the sandhills, but it turned out a disappointing night, very little coming to sugar or light. The next morning I revisited the same area with Mr. Fraser and carried out extensive beating for larvae, of which we got *Dicranura vinula*, *Notodonta dromedarius*, *N. ziczac*, *Smerinthus populi*, *Acronycta leporina*, etc. Among the butterflies *Eumenis semele* was very common. Later that day, August 1, I travelled to Witherslack looking in en route at Arnside, where *Erebia aethiops* was in great numbers. At the Derby Arms I met Mr. Austin Richardson, just arrived from York with a fine series of *Cosmia paleacea* and *Epione parallellaria* taken the previous day. That evening at dusk we tried the woods in the direction of Grange-over-Sands. The chief capture of interest was quite a fresh specimen of *Perizoma taeniata*, which was unusual for the time of year. Though the night seemed very favourable, comparatively little came to our lights and sugar on Meathop Moss except for a few female *Selidosema ericetaria* and the common Hooktips. The following morning we both motored straight through to Scotland. In the early evening I reached Coshieville, where Mr. T. E. Poore kindly let me once more carry out some duskings in his garden. The *Plusias* were the chief visitors, mainly *P. iota*, *P. chrysis*, and quite late I took a fresh *P. bractea* which had been so plentiful during the previous month. Late that night I joined Mr. A. G. B. Russell on some moors near Rannoch, where he and his family had already spent a very successful fortnight.

One of the main objects of our visit was to find out more about

the habits and habitats of *Crymodes exulis* f. *assimilis*, of which a dozen examples had been taken by several collectors in 1938. With this end in view we went on a tour of exploration on August 3. Having marked down a likely locality we decided to try our luck that evening. Just after midnight our judgment and efforts were rewarded when Mr. Russell took at sugar a fine male *assimilis* of the very dark form in perfect condition. Other insects on the patches included some remarkably dark *Noctua castanea*, a few fresh *Hama furva*, while we were also very gratified to find several *Aporophyla lutulenta* f. *luneburgensis* together with one of the grey variety f. *sedii*. Encouraged by these results we revisited this spot the next night, but sugar was very disappointing. Light, however, attracted a large number of *Stilbia anomala*, which came very late. Meanwhile, Mr. Anthony Russell had tried another area, and in spite of moonlit conditions and an easterly wind brought back five *assimilis*, including a female, all taken at sugar early in the evening. This unexpected catch induced us to make a further attempt in his locality the next night, August 4, which was as cool and clear as the previous one with an east wind again prevailing. Very shortly after putting on the sugar we got an *assimilis* and finished up with a total of five examples, including two of the browner form which came to light, the last at 2.30 a.m. On this occasion we saw the first *Celaena haworthii*, which also turned up again at our original pitch on the 5th, when we took yet another *assimilis* at light.

Day work at Rannoch was quite productive. *Larentia flavicincta* was swarming in a local quarry with plenty of *L. caesiata*. In the Black Wood *Cidaria immanata* and *Lygris populata* were everywhere with a sprinkling of *Thannonomoma brunneata*, which was nearly over. *Erebia aethiops* was in abundance in suitable localities along the Loch, while *Argynnis aglaja* was still much in evidence.

On August 7 I motored to Aviemore, where I had a very busy time at light till a late hour. Captures included *Pheosia dictaeoides*, a single *Dasychira fascelina*, *Celaena haworthii*, many *Stilbia anomala* and *Charaas graminis*. Among the Geometers by far the most interesting was the amazing assortment of *Ennomos elingvaria* which produced some deep orange and dark brown forms as well as examples with the upper wings quite plain, the band and cross-lines being absent. Other species in this group were *Thera cognata*, still fresh, *Xanthorhoe munitata*, *Cidaria immanata*, *Anartus plagiata*, *Malenydris didymata*, and females of *Dasydia myrtillata*.

On the 8th I paid yet another visit to our headquarters of the previous week. Sugar was extremely well patronized by a large number and variety of *Noctua castanea* as well as by some more

Aporophyla lutulenta, *Celaena haworthii*, *Hama furva* and *Mamestra rurea*. Just after midnight I had a pleasant surprise when a fine female *assimilis* turned up at light. This brought our total up to 14, divided equally into the brown and black forms. From our investigations we were able to confirm Dr. Kettlewell's observations that this species as in Shetland inhabits large peat bogs where there is a good growth of short grass interspersed with tufts of heather and grey moss, usually at an elevation of 800 to 1000 ft. In this type of terrain it is doubtless widespread all over the Highlands.

On August 9 I made my way to Findhorn, near Forres, where Mr. Russell and his family had arrived two days earlier. On the way I stopped at Aviemore and beat some full-fed larvae of *Endromis versicolor* and *Demas coryli*. That evening in spite of very wet conditions we all tried a stretch of road near Forres which was bordered with patches of white campion. Just as darkness was falling *Plusia bractea* began hovering over the blooms. We netted five, but only one was fresh. The flight only lasted 20 minutes. We then proceeded to a wood alongside the Findhorn river, taking at sugar our first *Noctua depuncta*, just out. The following afternoon I motored to some ground near the Culbin Sands where *Erebia aethiops* was again in great plenty, while the smoky form of *Mesoleuca bicolorata* was frequently disturbed from the alders. In the evening after getting some more *P. bractea* at the campions we revisited the Forres wood, finding three more fresh *N. depuncta* on the patches. On returning to Findhorn, searching the heather provided a good assortment of *Agrotis cursoria*, *A. tritici* and *A. vestigialis*, but there was a scarcity of *Triphaena comes*. Our night operations on August 11 took us to the Culbin Sands, where the commonest insect at sugar was *Dyschorista suspecta*. A few *Noctua dahlia* came to light. August 12 ushered in an extremely fine spell. On the Findhorn sandhills there was a fine variety of *Eumenis semele*, many of the males having the lower spot of the underside of the fore wings absent, while several females had extra spots on the upper wings. *Polyommatus icarus* was still about and produced some very large blue females. That evening I again took *Plusia bractea*, one more *Noctua depuncta* and some *Agrotids* on the heather. Ragwort seemed wholly unattractive throughout the period. On the 13th I was joined by Mr. E. J. Hare, the Russells having left the previous day. *P. bractea* was once more forthcoming at dusk, while sugar near Forres provided a further *N. depuncta*. Later that night insects swarmed to light on the sandhills at Findhorn, especially *Agrotis cursoria*. *A. tritici* and *A. vestigialis* were almost as plentiful together with *Miana literosa* and *Stilbia anomala*. We also took *Trichiura crataegi* and *Dasydia myrtillata*. For my final night in this area I

accompanied Mr. Hare on the 14th to a new part of the Culbin sands. At sugar among the birches we got our first *Cosmia paleacea*, just out, also single examples of the grey form of *Eurois occulta* and *Triphaena orbona* (subseque). There were a good many visitors to light, including *Pheosia dictaeoides*, *Noctua dahlia*, *T. comes*, *Agrotis cursoria*, *Acidalia inornata*, *Cidaria immanata*, and several species of Pug.

Leaving Forres on August 15, I made my way to Aviemore again by a 150-mile detour via Inverness, Loch Ness and Loch Laggan. Sugar that night in the birchwood was very unproductive, the only capture being *Aporophyla lutulenta*. At light, however, I took a fine *Cosmia paleacea*, with some more extreme forms of *Ennomos elinguararia* and *Cidaria immanata*. In brilliant sunshine the next afternoon *Plusia interrogationis* and *Carsia paludata* were still on the wing on the moors and in quite good condition.

The next two nights were spent among the birches, where light was very good, particularly for *Noctua dahlia*, of which the Russells and myself saw at least 50. *N. sobrina* was still about, a few fresh examples turning up at the lamps. *Thera cognata* was flying at dusk round the junipers with large numbers of *Eupithaacia sobrinata*, while on the heather we took the first *Cloantha solidaginis*. Sugar was a blank on each occasion.

Leaving Aviemore early on August 18 I motored 350 miles to York, arriving at dusk. Light near Strensall only produced *Pheosia dictaeoides* and *Ennomos alniaria*. Continuing southwards the next morning in glorious weather and breaking my journey at Lincoln, I reached the Norfolk Broads in the early evening. Conditions looked very unpropitious when Mr. Gane kindly rowed me to the south of Barton Broad, but soon after dark it became overcast. About 10 p.m. *Nonagria cannae* started arriving in a continuous stream to the lamp in the boat and it was not long before we saw a couple of dozen, but many got damaged in the water. There were a few *N. typhae* and *Leucania brevilinea*. Later on, light near Barton Turf attracted an *Oconestis quadra* and several *Lithosia griseola*, *Tholera cespitis* and *Hepialus sylvina*. The following morning, August 20, butterflies were very numerous, including *Papilio machaon*, *Pyronia tithonus* and *Pararge megera*. Making my way by the north Norfolk coast, I reached Wicken Fen in time for a very good night's collecting. Insects were swarming on the sugar patches, especially *Helotropha leucostigma*, as well as a good many *Agrotis nigricans*, *Triphaena fimbria*, *T. interjecta*, *Acronycta rumicis*, *Calymnia affinis*, and I was also surprised to see *C. pyralina* and *Celaena haworthii*. Light was equally productive. *Arsilochne albovenosa* was the principal visitor, together with *Nonagria arundineta*, *Phragmatobia fuliginosa*, *Cosmotriche potatoria* and *Arctia caja*.

A short halt on the 21st at Royston, where *Lysandra coridon* was still in abundance, concluded a very enjoyable and successful trip, which was all the more to be appreciated in the light of the subsequent turn of events abroad.

Milton Park,
Egham;
October, 1939.

FENLAND.

Land of sound-filled nights and sudden dawns,
Forgotten life and slowly dying forms;
Where Bustards were and Nightjars oft-times wail,
Of Bulrush, Sedge and vanishing Sweetgale
And banks of Ragged Robin 'long the dyke;
Of Norfolk Plover and the savage Shrike.

Beloved land where Grasshopper Warblers sing
And Harriers hang on silken ghostlike wing:
Land of the wind-break Poplars, Alder swamp,
And open droves where myriad insects romp.

I dream of glories thro' the bygone years—
When glints of copper lit your shallow meres
As the majestic, long lost dispar flew
Throughout the land, that then no "drainage" knew.

I dream of shimmering, mist-hazed long June days;
When Swallow-tails float down the droves, and laze
On outstretched wing, within those scented bowers
Of your great lodes, half-choked by rank fen flowers.

Land of the Water Dock and great Reed bed,
Where wild Milk Parsley rests its pond'rous head
On cushioned Water Bedstraw—there to sleep
As sweet Marsh Violets thro' the rushes peep.

—ERIC W. CLASSEY.

EARWIGS DESTROYING LARVAE.—Respecting Mr. Harrison's note (*Entom.*, 72:266) it may interest him to learn that in the autumn of 1892 I had 200 very small larvae of *Colias croceus*. One night an earwig killed the entire lot by biting them across the middle, evidently for the purpose of sucking their juice. The earwig had entered the folded-up clover leaflets to find the little resting larvae. The following morning I found all the larvae killed. By plunging the flower-pot containing the growing plant in water, very soon a large fat earwig was forced to the edge of the pot; upon killing it I found its extended body full of green liquid. The muslin covering the plant had a small hole eaten out on one side, the work of the intruder.—F. W. FROHAWK; November, 1939.

REVISIONAL NOTES ON MALAYAN RHOPALOCERA.

By A. STEVEN CORBET.

PAPILIONIDAE.

Papilio nephelus raya Cbt. This form from the Langkawi Islands is intermediate between Burmese *P. chaon* and Malayan *P. nephelus*, and there can be little doubt that the two are conspecific as Rothschild and Jordan suggested (1895, *Nov. Zool.*, 2 : 292).

P. nephelus sunatus nom. nov., proposed for *P. saturnus* Guér., 1840, preoccupied by *P. saturnus* Fab., 1787 (Hesperiidae) : the race of *P. nephelus* Bsdv. occurring in Malaya south of Kedah.

DANAIIDAE.

The forms *godartii* Luc. and *crassa* Btlr. are clearly subspecies of *Euploea amydone* Godt. and *E. klugii* Mre. respectively.

SATYRIDAE.

The oldest valid name for the species known as *Ragadia crisia* Hbn., and whose authorship should be attributed to Geyer and not Hübner (Hemming, 1937, Hübner, 1 : 477), is *makula* Horsfield.

AMATHUSIIDAE.

A study of the male genitalia of the Malayan species of *Faunis* Hbn. has shown that *taraki* Pend. is a variety of *F. canens arcesilas* Stich.

The oldest valid name for the species known as *Discophora continentalis* Stgr. appears to be *timora* Dbl. : the female holotype was described from "Timor," but agrees closely with specimens from Assam.

NYMPHALIDAE.

Cupha erymanthis tiomana subsp. nov. ♀. Differs from subsp. *lotis* Sulz., from the Malay Peninsula, in the richer and more reddish ground-colour, particularly in the post-discal area of the hind wing. The pale yellow post-discal band on the fore wing is browner and the black submarginal spots on both surfaces are distinctly larger. Underside more ochreous red than in *lotis* with the submarginal lunules on the hind wing and above vein 3 on the fore wing pale mauve instead of yellow. Wing expanse 63 mm. Pulau Tioman, 1931.

LYCAENIDAE.

The *melaena* group of *Celastrina* Tutt. Mistakes made in this group have been due to incorrect determinations of the female holotypes of *pellecebra* Fruh. and *lenya* Evans. With more material available, particularly the series of both sexes of all three species obtained in Malaya by Mr. J. N. Eliot, it has been possible to clear up the difficulties. The three species are :

1. *C. melaena*, with subspecies *melaenoides* Tytler (= *minima* Evans), Assam, *melaena* Doh. (= *lenya* Evans), Tenasserim, and *cowani* Cbt., Malaya (also Sumatra and Borneo) (Seitz, 9, pl. 152 g, 7 ♂).

2. *C. pellecebra*, with subspecies *moultoni* Chapm. (= *oskewa* Moul.), Borneo (Seitz, pl. 153 f, 7 ♂, 8 ♀), and *pellecebra* Fruh., N.E. Sumatra (also Malaya) (Seitz, pl. 152 g, 8 ♀).

3. *C. cyma* Tox., Malaya (also Sumatra and Borneo) (Distant, *Rhop. Malay.*, pl. xlv f, 6 ♂).

Male *lenya* of Evans (1932 : 222) and Corbet (1937 : 23) is *pellecebra* Fruh.; *cyma* ♀ of Corbet (1937 : 33) is also *pellecebra*, and *lenya* ♀ of Corbet (1937 : 24) from Siam and Malaya is referable to *cowani*. Fruhstorfer obtained both *melaena* and *cyma* on Penang Hill in January, 1894.

Key for the separation of the species of the melaena group.

- 1 (2) Un antenna with basal quarter of club strongly whitened.
 ♂ upF and H deep shining violet blue : no androconia.
 ♀ upF with narrow pale shining greenish blue streak
- 2 Un antenna club entirely black (faintly whitened in *cyma* ♀). *melaena*.
- 3 (4) ♂ upF and H shining blue; F apex very acute; no androconia. ♀ upF with large pale shining blue patch extending to dorsum *pellecebra*.
- 4 ♂ upF purple, on H purple almost confined to cell; androconia present. ♀ upF with narrow pale shining blue streak *cyma*.

On the underside of the hind wing a black spot is present in space 1a in *melaena* ♂ (all examined) and *cyma* ♂ (15 out of 17 examined), it is faint or absent in *melaena* ♀, and absent in *cyma* ♀ and in *pellecebra* ♂ and ♀.

***Anthene licates dusuntua* subsp. nov.** ♂. Upperside slightly duller than in *licates* Hew. from Macassar. Underside as in *licates* except that the orange border on the inner edge of the black sub-tornal spot in space 2 on the hind wing is about three times as

broad. Malay Peninsula, Selangor, Dusuntua, 13.i.1930 (Brigadier W. H. Evans).

Catochrysops panormus exiguus Dist. The description and poor figure of *exiguus* in *Rhop. Malay.*, pl. xlv, f. 17 ♀, leave no doubt that Distant was dealing with the Malayan subspecies of *C. panormus*; *perakana* Cbt., therefore, falls as a synonym.

Zizeeria otis lampa subsp. nov. ♂. Upperside duller and browner than in subsp. *sangra* Mre., Bengal, or *lysizone* Snell., Java, and with a broader border on both wings. Underside with the markings smaller and fainter than in *sangra*. Singapore, i.1930 (Brigadier W. H. Evans).

♀. Dark brown, with the wing bases dusted with purple-blue, the blue colour on the hind wing extending along the inner margin above vein 1 almost to the tornus. Underside darker than in the male and with the markings more distinct. Malacca.

Zizula gaika pygmaea Snell. The Malayan form is hardly separable from the Javanese subspecies *pygmaea*, of which the male is smaller and duller above than in the nominotypical form from Durban.

Everes potanini glycon subsp. nov. ♀. On the upperside, the black submarginal spots in the tornal half of the hind wing are darker, more prominent, and more clearly edged with pale blue than in subsp. *umbriel* Doh., East Pegu, and the cilia in the tornal half of the fore wing and on the hind wing are not so prominently whitened. Underside pale bluish grey with the post-discal stripes narrower and more ochreous, and the submarginal markings finer and more clearly defined than in *umbriel*; on the hind wing, the three black sub-basal spots of *umbriel* are obsolete and the sub-marginal spots in spaces 4, 5 and 6 are blackened. Wing expanse 20.5 mm. Langkawi Islands, Pulau Dayang Bunting, 1.ix.1932 (A. S. Corbet).

Pratapa cleobis pendleburyi subsp. nov. ♂. Upperside as in *cleobis* Godt., Assam and Burma. Underside as in *P. queda* Cbt. and differing from *cleobis* in the much larger orange subternal area (which extends broadly and continuously from the inner margin to vein 4), and in lacking the ochreous hue in the post-discal line on the hind wing. Two tufts on the dorsum on the underside of the fore wing exactly as in *cleobis*. Male genitalia as in *cleobis* Godt. and *queda* Cbt. Wing expanse 33.5 mm. Malay Peninsula, Pahang, Gunong Terbakar, 4480 ft., 15.v.1939 (H. M. Pendlebury). It is certainly curious that the two *Pratapa* species *cleobis* and

queda, which differ essentially only in that the latter lacks the second tuft on the fore wing, should both occur in Malaya.

Spindasis kutu sp. nov. ♂. Fore wing termen straighter than in *S. lohita senama* Fruh., Malaya. Upperside indigo-blue, shining purple in a side light, with the fore wing black border more clearly defined than in *senama*. Underside markings more crimson than in *senama*. On the fore wing the short crimson band beyond the long central diagonal band is parallel with the longer band beyond and so is directed towards, and is almost contiguous with, the central band. In *S. lohita* this short post-discal band is parallel with the long central band and is directed towards, and is almost contiguous with, the longer stripe beyond. Wing expanse 34 mm. Malay Peninsula, Selangor, Bukit Kutu, 3400 ft., 7.vi.1937 (J. N. Eliot).

♀. Upperside more purple brown than in *senama* ♀. Underside colour and markings exactly as in the male. Wing expanse 34 mm. Sumatra.

There appears to be little difference between the male genitalia of *S. lohita* and *S. kutu*, but the 2 ♂♂ and 3 ♀♀ of the latter which have passed through my hands are so distinct that I have no hesitation in placing *kutu* as a different species.

Spindasis lohita milleri subsp. nov. ♂♀. Differs from subsp. *senama* Fruh. from the Malay Peninsula in that the longitudinal bands below are dark brownish black and not crimson, thus closely approaching the Andaman race *zoilus* Mre. Langkawi Islands. ♂ holotype (J. V. Miller); ♀ allotype (17.iv.1928, H. M. Pendlebury).

Deudorix elioti sp. nov. Near to *D. epijarbas* Mre., but the antennae are shorter.

♂. Fore wing and hind wing termens more rounded than in *D. epijarbas cinnabarus* Fruh., ♂, Malaya. Upperside: pale brownish orange, with black markings as in *cinnabarus*, except that the fore wing black border is continued broadly along the dorsum. Hind wing lobe pale yellow, with a small black dot.

Underside: Pale greyish buff with markings arranged as in *cinnabarus*, but the post-discal fasciae are composed of rounded conjoined spots, outwardly and inwardly white-edged and darker than the ground. Fore wing post-discal band not extending below vein 2 and the cell-end spot well separated. The rather dark, diffuse marginal and submarginal bands more prominent than in *cinnabarus*, and with the interspace whitened. On the hind wing, the deep orange areas of *cinnabarus* are replaced by yellow, the

black spot in space 2 is smaller and the bluish-green metallic scaling is fainter and more diffuse. Fore wing 13 mm. Singapore, 8.v.1938 (J. N. Eliot).

The clasper is slightly longer than in *cinnabarus*, but differs distinctly in that its apex is gradually rounded and not clavate as in *cinnabarus*.

♀. Upperside as in *cinnabarus* ♀, except that the fore wing has a very obscure orange discal patch and the hind wing margin is rather broadly dusted with orange in spaces 1b, 1c and 2, and there is a small black submarginal dot in the orange area in space 2. Hind-wing lobe pale yellow, green scaled with a small, diffuse black spot. Underside as in ♂, but the ground-colour whiter. Fore wing 15 mm. Singapore (G. Meade-Waldo).

Bindahara phocides collenettei subsp. nov. ♂. Differs from *phocides* F., Borneo, in the absence of the purple-blue margin on the upperside of the hind wing. Underside differs from *ines* Swinh., Andamans, which the new subspecies most closely resembles, in the darker colour and less distinct markings. Wing expanse 29 mm.

♀. Figured in Distant, *Rhop. Malay.*, pl. x, f. 25 ♀. Underside with the markings more distinct than in the male.

Singapore, ♂ 10.viii.1919 and ♀ 11.vi.1922 (C. L. Collenette). Specimens from Tenasserim, Siam and Sumatra (male only examined) resemble the Malayan race.

HESPERIIDAE.

Tagiades litigiosa Mösch. ♂, Langkawi Islands, 16.i.1939 (J. N. Eliot), constitutes a new record for Malaya. Identity confirmed by genitalia examination.

Halpe zola zamba subsp. nov. ♂. Facies as in subsp. *zola* Evans ♂, Burma, having a small spot in the fore wing cell. Genitalia nearer subsp. *zinda* Evans, Java, in that the clasper lacks the central spine and its tip is more clavate and is thickened subterminally. Selangor, 5.viii.1936 (J. N. Eliot).

Thanks are due to Mr. J. N. Eliot, Royal Artillery, for the loan of specimens, and for considerable help in the elucidation of the *melaena* group of *Celastrina*.

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ZEUXIDIA DOUBLEDAILI WESTWOOD.

BY C. JOSLIN BROOKS.

THE following remarks are in extension of the note on *Zeuxidia doubledaili* West. published in the *Entomologist* (1937, 70 : 147).

The British Museum (Natural History) having acquired Fruhstorfer's collection of Amathusiidae containing his types, I have been able to compare his specimens of *Z. doubledaili* with those already in the Museum and mentioned in the above article. These consist of a very fine series of both sexes from West Sumatra (no more definite locality is cited), a few from Borneo, but none from Malaya.

Two specimens in the Sumatra series are distinguished as types; both are labelled *nicévillei*, but they differ in that one carries a hair pencil in the hind-wing cell speculum which is absent in the other. On comparison with specimens from Malaya I am unable to discover any difference on which to found a subspecies but, as Fruhstorfer mentions the hair pencil in his original description, I have accepted this as the distinguishing feature and type of *nicévillei*; also it is the only specimen in his series with this distinction.

An examination of the male genitalia was kindly undertaken by Dr. A. S. Corbet. It was found that Malayan and Sumatran specimens of *doubledaili* West., both with and without the hair pencil (forms *nicévillei* Fruh. and *doubledaili* West. respectively), Bornean *horsfieldii* Feld. and Javanese *dohrni* Fruh. have similar male genitalia and their conspecificity cannot be doubted. *Z. amethystus* Btlr. has entirely different male genitalia, the clasper, uncus and aedeagus all showing considerable differences from the same organs in *doubledaili*.

It is evident that *horsfieldii*, which I had withdrawn, must be returned as a subspecies of *doubledaili*, and that *dohrni* must be regarded as the Javanese race of the same species. In other respects the conclusions already published are substantiated.

NOTES AND OBSERVATIONS.

LEPIDOPTERA ON THE ISLE OF HANDA.—This island lies off the coast of Sutherland, to the north of Scourie, and we reached it in a fishing-boat from Tarbat. As we crossed the moorland to take the boat, we noticed on the mainland *Aglais urticae*, and in the "garden" of a croft crowds of larvae of *Pieris brassicae*, whilst junipers hugging the rocks yielded larvae of *Thera juniperata*. When we reached

Handa we were appalled at the scenes of desolation caused by promiscuous firing, drainage and over-grazing. Naturally there were few insects about, and only one species was on the wing. This was *Cidaria immanata*, and it was startled from rock faces in some numbers. Aspens, growing on cliff ledges, to a limited extent redeemed the position by producing larvae of *Notodonta ziczac* and *Cymatophora or.*—J. W. HESLOP HARRISON; King's College, University of Durham.

THE GALL-GNAT *PERRISIA ALPINA* F. LÖW ON THE ISLE OF RHUM.—Last year, when I was exploring the Orval area of Rhum, I began to descend one of the streams leading from the mountain to the sea. Fairly low down the gorge of the stream the Cushion Pink (*Silene acaulis*) began to appear in great masses on the rock ledges—a remarkable fact when one considers that the plant fails on Orval itself. It surprised me greatly to find that the majority of the plants were heavily galled by *Perrisia alpina*. The plant swarms on Barkeval, Hallival and Askival, but the gnat has never been seen there, nor on the Raasay cliffs.—J. W. HESLOP HARRISON; King's College, Newcastle upon Tyne.

SOMATOCHLORA ARCTICA ZETT., A DRAGONFLY NEW TO THE HEBRIDES ON THE ISLE OF RHUM.—As the Island of Rhum possesses a goodly supply of lochs, it is needless to say that the usual dragonflies found in the Hebrides occur in greater or less abundance. However, in view of the numbers of Boreal and Alpine plants which occurred on Barkeval, we worked the series of lochs and lochans lying between that mountain and Mam Tuath for northern and Alpine species of insects, but, except for one water-beetle, *Hydroporus foveolatus*, captured by my son Jack, nothing new turned up. We were therefore forced to conclude that, as far as dragonflies were concerned, we had exhausted the possibilities of the island. None the less, quite late in our stay, to make sure that we had neglected no area, we decided to explore the Torridonian Sandstone formations in the north, districts known from previous work to be more or less unproductive. There, between the hills known as Mullach Mhor and Meall a Ghoirtein just above the 750-ft. contour line, lies a series of lochans and peaty pools of varying depths, some connected by peaty channels, and others apparently without drainage exits. On one of these, bearing a sheet of white water-lilies, which are none too common on Rhum, we were fortunate enough to detect *Somatochlora arctica* in small numbers, spinning along the western shore, and occasionally leaving it for the adjoining drainage channels.—Prof. J. W. HESLOP HARRISON; King's College, University of Durham.

NONAGRIA SPARGANII ESP. FEEDING ON SCIRPUS LACUSTRIS.—On the south coast in 1939 I came across some large masses of *Scirpus lacustris*. I noticed that many of the stems were yellow. On examination I found that a larva had entered the stem about 6 in. above the base and after feeding downwards had left the stem for

another. At last I found a greenish larva in one of the stems which was undoubtedly *N. sparganii*. Further search among larger stems some little distance away produced more larvae and a few pupae. The latter were so very small that I could hardly believe they were *N. sparganii* until they produced imagines. Some of the males are the smallest I have ever seen, but the females vary from small to normal. In the first bed of *Scirpus* the larvae must have had great difficulty in finding a stem large enough in which to pupate. About a quarter of a mile away was another bed of *Scirpus* mixed with *Iris* and *Typha*. Here the larvae had fed in the *Iris* and *Typha* alone. The pupae in the *Scirpus* were hard to find. The larvae after feeding in a number of small stems apparently enter a strong young stem, sometimes only 6 or 8 in. high, to pupate. The only indication of their presence is a very slight yellowing of the tip.

Orthotaenia sparganella Thunb. also inhabits the *Scirpus* stems and causes a similar discoloration. The late E. P. Sharp told me that he had noticed yellow *Scirpus* stems in his district, but all that he could find in them was *O. sparganella*. His observation came to mind when I found both species in the same stem. I have always previously associated *N. algae* Esper with *Scirpus* and *Typha*, and *N. sparganii* Esp. with *Iris*, *Sparganium* and *Typha*.—H. M. EDELSTEN.

HERTS LEPIDOPTERA.—Two additions to Dr. Foster's list (*Trans. Herts Nat. Hist. Soc.*, 20, 1937) seem worth recording—*Evergestis straminealis* and *Peronea cristana*. The former occurs, but not commonly, along the river Ver between Redbourne and St. Albans, while the latter was noted in September, 1939, near the Roman Road, Broxbourne, several being seen, but only one var. *profanana* captured. Of species not frequently observed in the county before, *Odontosis carmelita*, two specimens, one on April 29, and one on May 6, 1939, both ♀, were found on the trunks of birch trees at Ashridge. *Alispa angustella*, previously recorded only from E. Herts (Cheshunt), occurs in some abundance between Aldbury and Tring (1937, 1938). *Salebria fusca*, a single specimen found at the flowers of *Buddleia globosa* in July, 1938. *Comacla senex* occurs locally in numbers along the Ver between Redbourne and St. Albans, and the fact is worth mention as it doubtless points to the source of the record from Dr. Williams's light-trap at Rothamsted. Finally, it may be mentioned that *Polychrosis euphorbiana* is not uncommon in Bucks near Tring, just beyond the county boundary, and it probably could be found in Herts also. The species seems difficult to breed, and from larvae obtained in 1937 and 1938 only one moth has been reared.—J. C. F. FRYER.

DO BUTTERFLIES GET "NERVES."—It is well known that in thundery weather some people get very "nervy" and "headachy," and I have no doubt that insects, at all events butterflies, are affected by barometric variations. I have lived for some years in typhoon and cyclone areas, and unless the butterflies had some pre-knowledge of what was going to happen, very few, if any, would survive a really

good typhoon or cyclone. I remember one particular cyclone in Mauritius, when the wind was so violent that those trees which remained erect after the storm had every leaf torn off, so that the tropical jungle looked like a wood in an English winter. Before the cyclones the trade wind from the south-east entirely ceases, the air becomes heavy, and the barometer drops in an amazing fashion. One is too busy on such occasions looking after one's own safety, laying in "hurricane rations," and putting up storm shutters to notice what these insects are doing, but it is evident that they also know what is coming, and they work their way right down into the roots of the vegetation, for they could not possibly remain on any leaves or twigs without being blown away and destroyed. And that this must be the procedure is shown by the fact that as soon as the cyclone or typhoon has passed and the atmosphere is normal, there are as many butterflies about as usual, including tiny "Blues" like *Zizera*.

Now here on August 20 last year the atmosphere became very thundery and the barometer dropped. Thunderstorms occurred all round this district. Next day was hot, foggy and without a single ray of sun. Yet the three "Whites" were all out and extraordinarily restless. *Pieris brassicae* predominated. They were not mating or visiting flowers, but just flying in numbers hither and thither, restless and perhaps "nervy." That afternoon I went by car into Breconshire over the Talgarth Pass with low clouds down on the mountains. The butterflies were everywhere still restless. On returning there was a *P. brassicae* flying about the garden at 8.30 p.m., after the sun had set, and it was getting quite dusk. That night Cardiff, not far away, experienced the worst thunderstorm it has ever had, and there were lesser storms all over Monmouthshire and Breconshire. It looks as if the insects knew what was coming but did not know what best to do.—B. TULLOCH (Brig.-General); Hill Court, Abergavenny, August 23, 1939.

TIGER MOTHS IN MILLIONS!—In *The Field* of October 15 last appeared the following letter: "Near the village of Peveragno, in the island of Rhodes, there is a wooded ravine in which there are thousands—I think I may say millions—of one species of moth. They swarm in every bush and tree and when disturbed fly out in their multitudes. I was told that this ravine is the only place in the island in which the moths are to be found, and also that they reappear year after year. On referring to *Morris's British Moths* the moth would seem to be the same as our common Tiger."—N. N. Blomefield, 13, Wellington Square, Chelsea. As this account did not seem consistent with the behaviour of *Arctia caia* as we know it, I asked if Mr. Blomefield could send me a specimen, and in reply I received two, which turned out to be *Callimorpha hera*. It seems rather curious, in view of the fact that this species feeds as a larva on common weeds, that it is as restricted in this Asiatic locality as it is in its British one.—C. NICHOLSON; Tresillian, Truro, Cornwall.

EARLY RECORDS OF ORTHOPTERA.—Among the manuscript notes of William Markwick, the naturalist of Catsfield, near Battle, who was a contemporary of Gilbert White, are a few early records of Orthoptera worthy of more permanent record. He kept a diary from 1768 to 1776 in four quarto volumes, entitled *A Calendar of Flora or Naturalists' Journal made at Catsfield near Battle, Sussex . . .*, and records the first and last appearances of the Common Grasshopper (*Stauroderus bicolor* Charp) under the mistaken name *Grossus grossus* over this period. The first dates were June 12th, 1768; June 14th, 1769; July 6th, 1770; June 22nd, 1771; June 21st; 1772; June 16th, 1773; June 15th, 1774 and 1775; and June 12th, 1776. He last saw it on October 30th, 1771; September 12th, 1773; October 9th, 1774; October 14th, 1775; and November 19th, 1776. In another manuscript book he records *Phasgonura viridissima* L. as "The Great Green Grasshopper, *Gryllus viridissimus*," and notes: "This insect was found at Hastings on July 26th 1807, was about two inches and an half in length, of a beautiful light green Colour with reddish Streaks on the upper side of the Thorax, and had a long strait sword-shaped Tail. Its Antennae were very long and slender." He made a water-colour sketch of this insect, together with Linnaeus' description of it. His last record of an Orthopteron was a nymph of *Periplaneta americana* L., also drawn side view and from above, with the note, "This Insect was found alive in a Box of Oranges which came from London May 29th 1808".—J. MANWARING BAINES; Public Museum, Hastings, October 6th, 1939.

THE SYNONYMY OF SOME TRICHOPTERA.—In the 1937 volume of this Journal (70 : 140) J. Stainer gave the very interesting information that the species *Asynarchus fusorius* McLachlan from Northern Europe and Siberia is identical with the North American species *A. modestus* Hagen. Since Hagen's name has priority, McLachlan's name *fusorius* is thus relegated to the rank of a synonym. On the other hand, as I pointed out in the *Entomologisk Tidskrift* for 1929 (p. 190), this species was described as early as 1840 by Zetterstedt (*Insecta Lapponica*, p. 1067) as *Phryganea fusca* var. *b. lapponica*. Hence the name of the species must be *Asynarchus lapponicus* Zett., with the synonyms *Anabolia modesta* Hagen and *Asynarchus fusorius* McLachlan. It is stated in Stainer's paper that *Limnophilus bipunctatus* Curt. was caught in Norwegian Lapland. This species, however, does not occur in Fennoscandia north of about 60° latitude. Stainer's specimen must belong to *L. scaleus* Wallengr., a species closely allied to *bipunctatus*, but having a more northern distribution. In this connection attention may be called to another matter of synonymy. In 1936 Martynov gave the name of *Leptocerus forcipatus* to a new *Leptocerus* species from India (*Rec. Indian Mus. Calcutta*, 38 : 253). Unfortunately this name is occupied, because in 1935 I gave it to a Chinese species (*Arkiv för Zoologi*, Band 27, A, 31 : 9). Hence, Martynov's species must be renamed, and since Martynov now is dead, I propose to call it *Leptocerus martynovi* nom. nov.—K. H. FORSSLUND; Stockholm.

THE ENTOMOLOGIST.

VOL. LXXIII.]

MARCH, 1940.

[No. 922

BUTTERFLIES IN CAITHNESS DURING 1939.

BY SINCLAIR SWANSON.

CAITHNESS, in common with the rest of Britain, experienced a heat wave at the end of May. The weather broke on June 7, and during the rest of the month it was mixed. July was a really bad month, with very little sunshine, but August and September were mainly fine. For all practical purposes winter began on October 4.

The following notes are mainly compiled from my own observations and, except where otherwise stated, refer to the immediate neighbourhood of the village of Keiss, which is situated on Sinclair Bay.

Maniola jurtina.—This species was generally abundant in all kinds of situations. It was first seen on June 19 and the last specimen appeared on September 5. Ova laid about July 22 hatched on August 14. The larvae grew very slowly.

Coenonympha tullia.—Though a careful watch was kept for it, this butterfly seemed to be somewhat scarce this year. It was seen from June 27 to August 13, but was most common during the latter half of July.

Argynnis aglaja.—Instead of appearing about July 1 as usual *aglaja* did not appear until July 23. No specimens were seen after August 13. Ova laid on July 24 hatched three weeks later.

Vanessa atalanta.—A butterfly seen on July 19 may have been this species, but a definite specimen was seen on the following day. Between then and August 18 a few were seen. Larvae were found sparingly from August 21 onwards. They seemed to be more numerous at Freswick, five miles north of Keiss. They began pupating on September 7 and two imagines emerged on the 23rd of the same month. The same day I noticed a freshly emerged specimen outside, the first *atalanta* which I have known to emerge outdoors here. My experience has been that the cold kills the insect in one of its earlier stages. The last emergence was on October 23.

Vanessa cardui.—There were two immigrations of *cardui* during 1939. Specimens of the earlier one were noticed on June 8, 27 and 29. I could find no larvae bred from these. The autumn

immigration began on September 1 and twelve were seen on the 4th. The species was last observed on September 16.

Aglais urticae.—This common butterfly appeared on April 7 and hibernated specimens lasted until June 27, when I saw a battered specimen with only one antenna. Its powers of flight did not seem to be impaired by this handicap. By June 22 I had several pupae, but owing to the bad weather the second brood did not begin until July 28. On August 3 I found a full-grown larva in the exact centre of a football pitch, far from any nettles. This shows the great distance which some larvae travel when about to pupate. In late August *urticae* was common on the moors, where there are no nettles. It was last noted on October 3.

Nymphalis io.—One was seen on September 24. As far as I know this is the farthest north that *io* has ever been seen. In a recent *Entomologist* a specimen was reported from Wick, five miles south of Keiss.

Polyommatus icarus.—This small butterfly was seen from June 13 to August 28. Larvae, which emerged on July 21, had not grown very much by the end of September.

Lycaena phlaeas.—This species has been gradually becoming rarer during the last few years and it was not observed in 1939 until September 24. Two were seen on September 26, and one of these was again noticed on the following day.

Pieris brassicae.—May 24 was the date of the first appearance of this species and it lasted until October 3. Though a parasitized larva pupated on August 5, it is probable that the specimens seen late in the year were not a second brood, but were fresh immigrants.

Pieris rapae.—I saw four (not necessarily all different) specimens on September 24. I have not seen the species here before.

Pieris napi.—This species appeared on May 20 and on June 3 large numbers were seen. On June 8 ova and young larvae were found and these began pupating on July 13, but no second brood emerged from them. Outdoors also the second brood was restricted and only lasted until September 6.

THE COMMON BLUE (*Polyommatus icarus* Rott.) ON THE ISLES OF PABBAY, FLODDAY AND FIARAY (BARRA ISLES).—There is nothing very wonderful in the occurrence of this species in the Outer Hebrides for, up to the present, I have visited no island in which it failed. However, the sand-dune colonies on Pabbay are noteworthy on account of the heavy percentage of the ab. *obsoleta* Clark which they produce. The same form turns up to a less extent on Flodday, a storm-swept islet south-west of Vatersay. On Fiaray, just north-west of Barra, where the species is on the small side, odd specimens of *obsoleta* were netted.—J. W. HESLOP HARRISON; King's College, University of Durham.

A NEW SPECIES AND TWO NEW SUBSPECIES OF
MELITAEA (LEP. NYMPHALIDAE).

BY L. G. HIGGINS.

Melitaea turkmanica sp. nov.

Fore wing 17-18 mm. ♂.

The general appearance of this little species suggests a dwarf specimen of *phoebe* W. V. On the upper surface the markings are bold, the ground-colour bright orange. On the fore-wing some yellow shading in the cell and behind the discal spots is present in two specimens. The usual markings are seen in the cell, and there is a complete series of conspicuous discal spots, oval near the costa. The post-discal field is unmarked except for a faint stria in cellule 1b and near the apex of the wing. There is a striking, regular submarginal border of black crescents enclosing the usual orange lunules, those in cellules 2 and 3 scarcely enlarged. On the hind wing the black basal suffusion extends on to the body fold. The usual marking is present in the cell and the discal spots appear in the posterior half of the wing. No doubt in some specimens a complete series is developed. The post-discal field is unmarked, the nervures not black. There is a regular border of black crescents and orange lunules similar to that of the fore wing. On the under-surface the markings are similar. On the fore wings the oval discal spots stand out clearly. The black submarginal crescents are complete, but faintly marked. The hind wings are not distinctive.

The male genitalia show affinity to those of *collina*. The tegumen of the single specimen examined shows two sharp scaphial projections. The clasp is distinctive. There are two processes posteriorly. One inferiorly directed downwards recalls *collina*, and above this is another much more slender, which is unfortunately broken in my preparation. The harpe is short, heavy and without teeth. The straight penis ends in an apex, which is not upturned.

No confusion should occur with this species, which is so well characterized by the large oval discal spots and the regular border of black crescents on both wings. The small size and the clear and unmarked post-discal fields will distinguish this butterfly from the closely allied *phoebe* which occurs in the same locality, and which shows, in addition, a greatly enlarged orange submarginal lunule in cellule 3.

Described from three old but well-preserved male specimens labelled "*casta* Koll. Mai- Askhabad." These were found in the collection at Tring Museum, and the labels are of the type used by

Staudinger in the last century. There is no indication to suggest how these three specimens arrived in the collection. It is likely that "Askhabad" is used in a wide sense to indicate collecting carried out from this centre. It is hoped that further specimens of this interesting species will be discovered. The type-specimens have been placed in the British Museum.

***Melitaea lukto mimetica* nov.**

M. robertsi robertsi Butl.; Evans, Indian Butterflies, ed. 2, 185, 1932 (sed *robertsi* Butl. = *trivia* W. V. forma).

This insect agrees in size with typical *lukto* from Chitral and the Punjab. It can be distinguished by the brighter and more reddish tone of the ground-colour of the upper surface, and by the reduction of the black markings. On the fore wings the yellowish macules behind the discal spots are often prominent, and frequently developed into a fascia which extends right across the wing. The post-discal spots are rarely present, and the disc of the hind wing is unmarked in most cases, while the black basal suffusion is much reduced. The sexes are similar. On the under-surface the proximal orange fascia of the hind wing is much broken and absent in cellule 1c, while the black V-marks are only distinctly angled in cellules 2, 3 and 4.

There are three principal features in which the male genitalia differ from those of typical *lukto*. The posterior process of the clasp seen from above is less acutely curved and is more slender. The harpe is longer, more slender and without teeth and the saccus is more simple, produced forwards, but the rolled inferior lip is not obvious. The development of the saccus is rather variable, and the contrast is not great in all specimens.

The male holotype from Khojak and the female allotype from Ziarat Road are both in the British Museum, with four paratypes from various localities. Six paratypes in the author's collection.

Localities.—Only known from Baluchistan: Khojak, April 11-20, 6500 ft. (type); Ziarat Road, April 20 (allotype); Zaghum, April 14, 6000 ft.; Sheik Wazil, April 26; Urak, May 26; Quetta, April 15; Gawar, August 7.

This insect strongly resembles some specimens of *M. dodgsoni* Gr.-Sm. which flies with it in Baluchistan. It may be separated by the heavy costal bar formed by the four superior discal spots on the fore wing, by the more extensive dark suffusion at the base of the hind wing, and on the under surface by the broken and irregular markings at the base of the wing. The subspecific characters of *mimetica* are very well marked. The butterfly appears to be common and generally distributed in Baluchistan, but nothing is

known of the possible occurrence of the species between here and Chitral, where the typical form flies.

Melitaea scotosia butleri nov.

This subspecies differs from *scotosia* in the absence of the proximal border of the submarginal fascia on the upper surface of the hind wing. In most specimens the post-discal marks are diminished also on the fore wing, in particular the spot in cellule 1b near the anal angle. This leaves a very wide post-discal area of clear orange across both wings, marked only by the darkened nervures as they cross. As a rule there is a rather obscure fascia of paler yellowish macules immediately posterior to the discal spots of both wings. On the under-surface the spots of the submarginal fascia often show black pupils. This form is almost restricted to the male. I have seen only one female specimen.

The genitalia do not differ from those of the typical form. Nearly all my specimens from China and Mongolia are referable to *butleri* and in these districts it appears to replace the typical form. Exceptions are uncommon, but I have seen a typical specimen labelled "Pekin." Further north the material available is poor and without good data, but it is probable that both forms occur in the province of Amur.

The male holotype and female allotype are in the British Museum.

Localities.—CHINA: Pekin district. No further data (type); Hoang-yong-shan, 2500 m., July; Western Pekin Mts.; Kansu (east), Hweisi, Tsinglingshan, 1500 m., July; (south) Tsing-schui, Liu-pin-shan, 2000 m., July; Lihsien, Kialing River, 2500 m., June; Tschong, Ngan-shan, 2000 m., July.

MONGOLIA: "Mongolia"; no further data.

AMUR: "Amur"; no further data. Some specimens from here are typical *scotosia*, and *phoebe* also occurs.

SIMAETHIS FABRICIANA L. ON THE ISLE OF PABBAY (BARRA ISLES).—This moth is, of course, plentiful enough on every Hebridean island upon which nettle grows. Nevertheless, I have never encountered it in such enormous quantities as on Pabbay. This island has been deserted for some considerable time, but around the ruins of an old dwelling beds of nettles still linger. These, in July, 1939, were reduced to bare stems by hordes of larvae of *Simaethis fabriciana*, some of which were still wandering aimlessly about. On the neighbouring Isle of Sandray the insect, although common enough, occurred in much less abundance.—J. W. HESLOP HARRISON; King's College, University of Durham.

NOTES ON THE SYNONYMY OF SOME GENERA OF
EUROPEAN *PIMPLINAE* (*s.l.*) (HYM. ICHNEU-
MONIDAE).

BY J. F. PERKINS, B.Sc.

DURING the past five years I have been able to examine the types of certain little-known genera of *Pimplinae* (*s.l.*). I wish to express my thanks to Prof. Bischoff (Berlin), Prof. Habermehl (Worms), Dr. Kemner (Lund), Prof. Pax (Breslau), Dr. Roman (Stockholm), Dr. Rosén (Munich) and M. Seyrig (Paris) for the facilities that they accorded me in examining the following and other types.

Certain of the genera here synonymized have not been recognized since they were described, and although previously placed in the *Pimplinae* belong in part to other sub-families.

In the following genera either the genotypes have already been fixed, or the genera were monobasic. Details of the type selections can be obtained by reference to Viereck, 1914, and Stiles, 1936.

I have marked with an asterisk those species of which I have examined the types.

Ephialtes Gravenhorst, 1829, type, *Ichneumon manifestator* Linnaeus, 1758.* (*Vide* Stiles, 1936.)

Synonyms :

Apistephialtes Seyrig, 1928, type *A. perversus* (Seyrig, 1927).* (n. n. for *Apistes* Seyrig, 1927). (**Syn. nov.**)

Apistes Seyrig, 1927, nec Fischer, 1823, type *A. perversus* Seyrig, 1927.* (**Syn. nov.**)

Calliephialtes Ashmead, 1900, type *Ephialtes xanthothorax* Ashmead, 1890. (**Syn. nov.**)

Epiurus Förster, 1868, type *Pimpla brevicornis* Gravenhorst, 1829.* (**Syn. nov.**)

Eremochila Förster, 1868, type *Pimpla ruficollis* Gravenhorst, 1829.* (**Syn. nov.**)

Exeristes Förster, 1868, type *Ichneumon roborator* Fabricius, 1793. (**Syn. nov.**)

Iseropus Förster, 1868, type *Ichneumon graminellae* Schrank, 1802. (**Syn. nov.**)

Scambus Hartig, 1838, type *S. sagax* Hartig, 1838.*

Tromera Förster, 1868, type *Pimpla pomorum* Ratzeburg, 1848.* (**Syn. nov.**)

It may be possible later to retain certain of these names for subgenera. I have now examined well over a hundred species of the above group from Europe, Asia and America, and have been unable to define any of the genera in both sexes, though in some groups the males show group characters, and in others the females. However, the groups that could be made for the males do not coincide with the groups that could be made for the females, for many of the characters are either sexual, or secondary sexual ones.

Apistephialtes perversus (Seyrig, 1927) is a synonym of *Ephialtes ascaniae* Rudow, 1883. The latter species has not been recognized since it was described (as is the case with all species of *Ichneumonidae* described by Rudow). I was able to examine the Rudow types of *Pimplinae* during a visit to Berlin, and find that almost all are synonyms of well-known and common species.

The synonymy of *Ephialtes ascaniae* Rudow, 1883,* is as follows :

Apistephialtes perversus (Seyrig, 1927).* (Syn. nov.)

Apistes perversus Seyrig, 1927.* (Syn. nov.)

Ephialtes sanguinicollis Brauns, 1901.* (Syn. nov.)

Ephialtes ruficollis Desvignes, 1856,* nec (Gravenhorst, 1829).¹ (Syn. nov.)

Poemenia Holmgren, 1859, type *P. notata* Holmgren, 1859.*

Synonym : *Lissonotopsis* Habermehl, 1917, type *rufa* Habermehl, 1917.* (Syn. nov.)

These two genotypes are conspecific.

Idiogramma Förster, 1868, type *I. euryops* Schmiedeknecht, 1888.

Synonym : *Macrochasma* Thomson, 1888, type *M. alysiina* Thomson, 1888.* (Syn. nov.)

Förster gave a manuscript name, *euryops*, to specimens that he named of his genus *Idiogramma*. Schmiedeknecht published this specific name in 1888, without description, but gave a further diagnosis of the genus. According to Opinion 46 of the Rules of Zoological Nomenclature, as this is the only species included in the genus the name is valid. I have not seen the type of this species, but I have examined material bearing this name and determined by Förster both in the Berlin University Museum and in the British Museum, and find that it is conspecific with the type material of *Macrochasma alysiina* Thomson, in the Lund University Museum. It belongs to the tribe *Adelognathini* (see Roman, 1918).

Phidias Snellen van Vollenhoven, 1878, type *P. aciculatus* S. v. V., 1878.

Synonymy : *Stenolabis* Kriechbaumer, 1894, type *S. cingulata* Kriech., 1894.* (Syn. nov.)

Kriechbaumer placed *Stenolabis* in the *Pimplinae*. I find that *S. cingulata* Kriech is conspecific with *P. aciculatus* S. v. V., which is placed in the tribe *Plectiscini*.

I have been unable to obtain type material of *Otenochira* Förster, 1868, which is placed in the *Pimplini* by Förster and Schmiedeknecht. It certainly does not belong to the *Pimplini*, *Ephialtini*, *Polysphinctini* or *Rhyssini* (into which the European *Pimplini* of

¹ *Pimpla ruficollis* Gravenhorst, 1829 = *Ephialtes ruficollis* (Grav., 1829). (Conjunctio nova.)

Schmiedeknecht are now divided). From the original description of the genus and from the notes given in Schmiedeknecht's papers it would appear that this genus is probably the same as *Ctenacme* Förster (= *Ctenacmus* Thomson), which belongs to the sub-tribe *Polyblastina* of the tribe *Tryphonini*.

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Department of Entomology,
 British Museum (Natural History),
 London, S.W. 7 ;
 January 8, 1940.

ROSE-LEAF CUTTER BEES IN THE OUTER HEBRIDES.—Although in general much more prevalent in the Outer Hebrides than botanists have imagined, wild roses are of great enough interest to warrant serious efforts to examine every specimen found on the less frequented islands. Hence, when Miss E. Bolton and I discovered a clump of wild roses on the narrow "hog's back" between two ugly-looking chasms piercing the sea cliffs on the Isle of Vatersay, I determined to risk the climb to get specimens. I managed to reach my goal, and was gratified to get not only my roses, but also to see a Rose-leaf Cutter Bee hard at work on the leaves. It was quite impossible for me to catch it as I was lying in an oblique position owing to peculiarities in the slopes and rock formations. Hence I can give no exact name for the species, although I believe it was *Megachile circumcincta* Lep.—J. W. HESLOP HARRISON ; King's College, University of Durham.

ACHERONTIA ATROPOS IN WEST SUSSEX DURING 1939.

BY LEONARD G. HULLS, F.R.E.S.

ALTHOUGH comparatively few specimens of *Acherontia atropos* were taken in West Sussex during 1939, and war conditions made it impossible to make any very detailed observations on them, there are a few points which seem worthy of record. It may be recalled that the writer's first encounter with numbers of *atropos* in the county was in 1933, and the next occasion when the insect was at all abundant was during 1938. It was, therefore, not expected that 1939 would be an *atropos* year for the district, and the taking of 28 larvae and pupae was in the nature of a surprise. The surprise was the more pleasant in that the "bag" was found to contain a larva of the brown type, and this insect, which had long been desired for the purpose, at once had its portrait painted. A point of interest in connection with the distribution of the insects this year is that none of them was obtained from the fields, which, on past occasions, had yielded numbers of specimens. Nearly all of them were taken in one particular potato field a mile or so further inland in a north-westerly direction. Unfortunately, a considerable number of the insects were dug up when they were within a day or two of pupation, and this certainly must have accounted for the subsequent high mortality rate. A number of them failed to complete pupation, and several of those which did successfully accomplish the change died shortly afterwards. Eight moths were eventually obtained, and of these, only four were perfect. In a previous communication (1934, *Entomologist*, 67) it was noted that when the moth is only slightly deformed or undeveloped, the imperfection is usually confined to the right underwing. This has again proved to be so, three out of the eight moths having this defect. The point is not without interest, and might form a suitable query for the student of insect physiology. Although the number of moths obtained was disappointingly low, consolation appeared in the shape of a specimen of the aberrational form *variegata*, the only example encountered in dealing with numbers of the moths over a period of some years.

One insect proved of particular interest, and is worthy of special comment. It was taken as a larva on October 3, and, from its size, was very far from full grown. It moulted on the following day, leaving behind a skin which was remarkable for its intense yellow colour. It seemed worth while to try extracting the pigment from this skin, and alcohol, the first solvent employed, proved satisfactory. The solution, evaporated on a micro-slide, yielded a

minute quantity of pale yellow needles, unfortunately insufficient for a melting-point determination. The larva fed sparingly and growth was slow. During the last few days of October it appeared very sluggish, ate very little, and spent most of its time motionless on the food-plant. This behaviour was unusual for *atropos*, and visions arose of having the pleasure of dealing with its parasite.

On November 1, when the larva was still comparatively small (about $3\frac{1}{2}$ in. in length), it left the plant and started its period of wandering. Put into a box of earth the following day, it at once buried itself, but reappeared on the surface some hours later. Pupation finally occurred on November 11, thereby establishing the fact of a stadium occupying over five weeks. This is very interesting, especially in the light of Tutt's statement, which says: "The larva of this species grows very rapidly, the first four ecdyses following one another very quickly, usually within four or five days. The fifth (and last) stage is completed in about 8 to 14 days, so that the entire larval period may occupy no more than 30 days." The small pupa, that of a male insect, was put in the forcing apparatus on November 12, and it was not until December 23 that any signs of emergence became manifest. At this time the pupa behaved normally and showed the usual activity when handled. On the basis of very considerable experience, the forecast was made that emergence would occur during the ensuing night, but this failed to happen. Examination of the pupa on the following morning led to the conclusion that the moth, although ready to emerge, had not sufficient strength to rupture the pupa case—a state of affairs to be met with fairly frequently when forcing out *atropos*. The forcing apparatus was taken down and stood directly on top of the hot stove. This had the effect of enveloping the pupa in a steamy heat, and, after a few hours of the treatment, the apparatus was replaced on the mantleshelf above the stove. A weak but perfect moth emerged at 10 o'clock that evening.

Although a local newspaper has recently credited the writer with discovering that *atropos* first visited West Sussex in 1933, it is well known that the insect has been recorded from this part of the country for very many years past. It was perhaps worth spending twopence at the village jumble sale to purchase a fusty copy of *Hardwicke's Science Gossip* for the year 1879, in which may be found the following record of the insect:

"Last year a death's head moth was picked up on a fine old oak staircase, erected at West Hampnett House, by Sir John Chapman, in 1617. This year, early in October, another specimen was taken in an adjoining room. No chloroform being immediately available, the peculiar shrill squeak, characteristic of *Acherontia*

atropos, was repeatedly heard. Within the Union House no special attraction was apparent ; but, a few yards distant, half of the large garden was, as usual, planted with potatoes. The past twelve months were sufficiently gloomy in every respect for a purely agricultural district sown with wide breadths of corn ; and visitation by such 'casuals' at the commencement of a period of great trial and depression, and again later, though it is to be feared not at the termination of it, might, in Eastern Europe, have been interpreted as an evil omen. Great average longevity of the pauper inmates has not, however, yet been perceptibly decreased by these heralds of the destroying angel. One resident stood for the militia drawing some eighty years since, and well remembers the bells of Alresford and the surrounding village churches being rung, night after night for a week, and then, occasionally, in commemoration of the great victory at the Nile in 1798 ; he continues hearty and well in spite of *Acherontia atropos*."

One is tempted to continue the theme and point out that the abundance of *atropos* in 1933 coincided with the rise to power of the Nazi party in Germany ; that the next appearance of the insect was during the famous September crisis of 1938, and, finally, that in 1939 the first *atropos* was taken only a few hours before the declaration of war !

"Rax,"
Chidham,
Nr. Chichester.

STRIDULATION IN *NYMPHALIS IO*.—The article by Mr. Gopsill on this subject reminds me of some interesting experiences I had last autumn concerning the stridulation of *Nymphalis io*. Last August I obtained a brood of some 50 larvae. They hatched on August 2, 3 and 4. I put them in an outdoor cage in natural conditions. Stridulation occurred on dull days. When I passed my hands into the cage almost all the insects, which were at rest on the perforated zinc roof, gave the well-known squeaking noise. Unfortunately I did not at the time make further observations. However, I released all the specimens on a fine day about August 6. On the same day, when I was going sugaring, a very interesting thing happened. It had been a hot day. I was walking round in the dark with a torch when I came to a horse-chestnut tree. It had foliage low down. As I smeared the sugar on, my head moved a little branch above. Suddenly I heard a familiar noise. I recognized it as the stridulation. I hit the branch again, but received no response. I repeated it on a nearby branch. Eventually I found a perfect *Vanessa io*, possibly one I had released, at rest on the underside of a leaf, about 6 ft. from the ground. It had presumably stridulated owing to the branch moving.—R. LOVELL WILKS ; Malvern College.

A NEW BRITISH AGROTID: *PROCUS VERSICOLOR* BKH.

By C. G. M. DE WORMS, PH.D., F.R.E.S.

IN 1932 the eminent German entomologist Heydemann re-described in the *Entomologische Zeitschrift, Frankfurt a/Main* for that year a species of *Procus* (= *Miana*) which had been originally recognized and named *Miana versicolor* by Borkhausen in 1792. Though from the recognized specimens its range was considered to cover only Central Europe, it was thought that it might equally well inhabit the western regions, including the British Isles.

While on a visit to Denmark in May, 1939, I had the opportunity of seeing the very fine and extensive collection of Dr. Skat Hoffmeyer at Aarhus and also that in the Museum of Natural History at Copenhagen. In each of these there was a long series of *P. versicolor* which had been separated (on the genitalia) from the nearly-related species *P. strigilis* and *P. latruncula*. I took advantage of this opportunity to note the exact superficial distinctions between the three insects. On my return, while on a visit at the end of June to Mr. Austin Richardson, I spotted in his series of the Mianas two examples (males) which seemed to fit in with *P. versicolor*. These he was good enough to let me submit to Mr. Tams, who very kindly undertook an exhaustive study of the genitalia and was able to show conclusively that they were the species in question.

Subsequently Mr. Richardson, in company with Dr. Cockayne, took several more specimens at the Gloucestershire locality which produced the original two. I have since seen some *Procus* from Ireland which would appear to be this insect and there are also reports of it from the midland counties. A very good account of *P. versicolor* is given in the Danish journal *Saettryk af Entomologie Meddel.*, 1935, 19 : 231 and 247, by Mr. Niels Wolff, in which he shows photographs of this species alongside *P. strigilis* and *P. latruncula*, together with very good comparative drawings of the genitalia of both sexes in all three insects. On the whole *P. versicolor* is slightly smaller and narrower-winged than the other two species. It is said, too, to appear later than these, in early July. Its ground colour is usually ruddy, almost that of claret, while one of its chief characteristics seems to be the distinct reniform and orbicular, which are generally ochreous and stand out well from the background. The genitalia in both sexes approximate more to those of *P. strigilis* than to those of *P. latruncula*. We hope that Mr. Tams will publish further details, including photos of the

genitalia. He has also discovered examples of it from several parts of France, and I feel little doubt that many specimens of this long-sought species lie unrecognized in British collections.

Milton Park,
Egham.

SCHRANKIA COSTAESTRIGALIS STEPH. BRED.—A female taken at the end of August, 1938, laid a small batch of eggs on the side of the box. The egg is white, not dark red as stated by Buckler. These eggs hatched in about 14 days. The newly hatched larva is transparent pinky white with a very large blackish head. They were given an assortment of plants comprising the flowering shoots of *Erica cinerea*, *Erica tetralix*, *Calluna vulgaris*, *Scutellaria minor*, *Mentha aquatica*, *Scabiosa succisa*, *Eupatorium cannabinum*. They took at once to the *Mentha* flowers, feeding on the stamens and anthers. They ignored all the other plants, except Scabious, of which they occasionally nibbled the stamens and anthers. During the day they hid themselves in some Sphagnum and Hypnum moss. They fed at night and were exceedingly shy of a light, crawling into or under the flowers at once. About the middle of November they started to hibernate, stretched out on the undersides of old willow leaves. Some rootstocks of *Mentha* were potted up with Sphagnum, Hypnum and old willow leaves. The pot was stood in an old frame, partly protected from heavy rain. In early April I noticed that the basal leaves of the *Mentha* were being nibbled and they also appeared to feed on the decaying cuticle of the willow leaves. Four larvae came through the winter. About the middle of May one had spun up under a willow leaf. The cocoon was formed of Hypnum and the decayed papery cuticle of the leaf and had a strong silk lining. The pupa is pale yellow. The imago emerged on June 21, 1939, and is an exceedingly melanic specimen. The other three larvae unfortunately escaped through some animal knocking the pot over during my absence. Buckler's figure (pl. cxlviii, vol. ix) gives a very good idea of the larva. It rests looped up with the anterior segments slightly raised from its support. Larvae obtained from the June brood would probably feed up straightway on *Mentha* flowers and produce imagines in August and September.—H. M. EDELSTEN.

WHITE LARVAE OF NOTODONTA ZICZAC.—Re Mr. Allan's note about white larvae of this species (1939, *Entom.*, 72: 186), such larvae are by no means uncommon here. I should say that about half of the local larvae are white, or practically white. I find larvae of nearly every colour, including almost black ones. It is possible that different food-plants produce different coloured larvae.—SINCLAIR SWANSON; Keiss Village, Wick, Caithness.

MIGRATION RECORDS (SUPPLEMENTARY), 1939.

BY CAPT. T. DANNREUTHER, R.N.

THE following additional records and corrections will serve to complete the summary given in *Entom.*, 73 : 29-32 :

In the Table of Comparative Estimates of Abundance in 1939, column for the N.E. of England, both *Vanessa cardui* and *V. atalanta* (Birtley, Durham) should be marked FC ; *Plusia gamma* C* (20-30 at Blanchard, Northumberland) ; and *Acherontia atropos* R (Durham). In the column for Scotland, *V. cardui* should be marked C* (common in Western Isles of Coll and Gunna, August 30) and *P. gamma* VC* (hundreds in Coll, June 1 and August 30). (Prof. J. W. Heslop Harrison, F.R.S.)

II. Notes and Additions to General Summary, 1939.

Pieris brassicae : Migration appears to have extended to the Outer Hebrides, as the species was reported as very common in the Isle of Barra on July 19. (J. W. H. H.)

Vanessa cardui : Immigration was observed about a week earlier than as reported in *Entom.*, 72 : 274. At 2.30 p.m. on May 31 near Dartmouth, forty were seen flying inland to the north. (J. P. H. Brown.)

III. Further Notes on other Immigrant Insects recorded, 1939.

Vanessa cardui : The range throughout Scotland is shown by specimens reported in the Shetlands, both Mainland and Out Skerries. (Rev. J. C. R. Jourdain.) In the west it was common in the Isle of Coll on August 30. (J. W. H. H.)

Acherontia atropos : "Did occur in Durham—one or two." (J. W. H. H.)

Herse convolvuli : At Peel, Isle of Man, a specimen was taken on July 29. (J. Cowley.) Total 13 for the season.

Macroglossum stellatarum : Ten larvae were found at Southwold. (E. Ramsden.)

Plusia gamma : A few larvae were found in South Uist, Outer Hebrides. Moths were very common in the Isle of Coll on June 1 and again on August 30. (J. W. H. H.)

Plutella maculipennis : Both larvae and pupae were fairly common in South Uist on August 12. (*Ent. Mo. Mag.*, November.)

Celerio galii : A larva was also found at Eastbourne. (H. R. B. Oakley.)

Lithosia quadra: One taken at light at Barton Turf, Norfolk Broads. (C. G. M. de Worms.) (*Entom.*, 73 : 37.)

Plusia interrogationis: "Were on the wing in brilliant sunshine on the moors in quite good condition" at Aviemore, Inverness, on August 16. (C. G. M. de Worms.) (*Entom.*, 73 : 37.)

IV. First Records for 1940 in hand.

Vanessa atalanta: As slight evidence of attempted hibernation in exceptionally severe cold, it may be of interest to record that a male specimen was picked up alive on January 12, 1940, when lying on the ground near a wood-stack at Buckland-in-the-Moor (A. Adams) and verified by Engr.-Capt. S. T. Stidston at Ashburton. On January 27 at Port St. Mary, Isle of Man, a specimen was found dead in an attic, where it had not appeared earlier in the week when the attic was last visited. (C. F. Butterworth.)

"Windycroft,"
Hastings;
February 15, 1940.

NOTE ON THE FOOD-PLANT OF *DANAUS PLEXIPPUS* L.—With reference to *Entom.*, 68 : 240 and 273, from various authorities it is now clear that in warm climates the non-deciduous milkweed, *Asclepias curassavica* L. (wherever found), is the food-plant of *D. plexippus*. Of South American origin, it is known in Tenerife as the "Arbol de Seda," and, spreading from the Solomon Islands, it is now known as the "Red Head Cotton Bush" in Queensland and Tasmania, where *D. plexippus* appeared in April, 1938. Other Milkweeds reported as food-plants are *Asclepias syriaca*, *A. purpurascens*, *A. tuberosa*, *A. phytolaccoides*, *A. rubra*, *A. pumila*, *A. rotundiflora* and *A. fruticosa*. The Periwinkle, *Vinca major*, is also suitable and *Apocynum androsaemifolium* is a known food-plant. Major H. Blackiston has information that the larvae will eat lettuce. In the National Parks of South Australia, where *D. plexippus* is very common in summer, the "Broad-leaved Cotton-bush," *A. rotundiflora* Mill., is common, but *A. fruticosa* L., the "Narrow-leaved" species, is dying out. *Vinca major* is also present, and all three are regarded as introduced species. *A. curassavica* has a pretty gold and red flower and is easily grown in our greenhouses and is named after the island of Curacao, where it is indigenous (Step: *Flowers of the Garden*).—(Capt.) T. DANNREUTHER, R.N.; "Windycroft," Hastings, February 20, 1939.

AGLAIS URTICAE IN DECEMBER.—On December 11, 1939, I saw a perfect *Aglais urticae* fly strongly up from a patch of grass where it had apparently been sunning itself. The weather at the time (midday) was sunny and warm, with a temperature of 51°—a very late record for this species.—A. E. MOON, F.R.Met.S.; The Furnace, Horam, East Sussex.

THE DESCRIPTION OF *HODOTERMES UBACHI* NAVAS,
1911 (ISOPTERA).

BY FRANCIS J. GRIFFIN.

IN the course of the preparation of a catalogue of Termites I have seen the original description of all the species except that of *H. ubachi* Navas, of which I failed to trace a copy in England. I am indebted to Dr. F. E. Zeuner, who, through the kind offices of R. P. Chr. Burdo of Jersey put me in touch with Dr. Bernardino Llorca S. J., of Barcelona, who kindly supplied a typewritten copy of the original description from *Revista Montserratina* Barcelona, 5 : 120-121, 1911. Since it is improbable that workers on the Termites can refer to the original I submit the typewritten copy herewith :
p. 120.

" *Hodotermes Ubachi* sp. nov.

" *Piceus, nitens.*

" Caput magnum, prothorace latius, piceum, clypei parte antica, ore, antennis 25 articulis, fulvis; antennarum primo articulo obscuriore, ultimo lanceolato, elongato; oculis rotundatis, vix prominulis; ocellis vix pallidioribus; palpis fuscis, segmentis apice fulvis.

" Prothorax transversus, margine antico recto, angulis posticis rotundatis. Meso- et metanotum unicoloria, picea. Pectus castaneum.

" Abdomen superne piceum, ad latera et inferne fusco-testaceum.

" Pedes fusci, tibiis apice et tarsis totis testaceis.

" Alae membrana fulvo tincta, densius in areis costali et subcostali, venis crassis, costali, subcostali et radiali fusciscentibus, reliquis fulvis.

" Ala anterior radio 5 ramos antrorsum emittente, unum retrorsum; procubito ad medium furcato; cubito quinque ramis ad basim simplicibus, uno ad medium furcato, ipsoque cubito furcato ad medium.

" Ala posterior radio ramis 5 anticis, 1 rudimentario postico; procubito
p. 121.

" ante medium furcato; cubito 4 ramis ad basim simplicibus, alio bis furcato; ipso ante medium in duos diviso, ramo postico furcato.

" Longit. corp. (usque ad alae apicem) 20 mm.

" " " (usque ad abdom. apicem) 9.5 mm.

" " al. anter., 16.4 mm.

" " " poster., 15.5 mm.

" Patria. Cercanías del Mar Muerto.

" Se parece bastante a las especies *ahngerianus* Jacobs. y *turkestanicus* Jacobs.; en la forma y número de artejos de las antenas conviene con el primero; mas difiere en el tamaño, longitud proporcional de las alas, color etc.

" Zaragoza, Enero de 1911."

NOTES AND OBSERVATIONS.

TWO REMARKABLE COLLECTING NIGHTS DURING 1939.—I think it is of interest to put on record two unusually good nights, the first chiefly as regards light and the other for sugar. On June 21 I travelled from London to Ashford, which I reached in the late evening, under very unpropitious conditions, so much so that a friend who was to have joined me did not think it worth while turning out. A strong north-east wind was blowing, bringing with it a driving mist. I almost did not sally forth, but on reaching the local woods at dusk I noticed a certain number of insects on the move. So I carried out some sugaring, and on the first round was surprised to take two fresh *Diptera orion* and several *Acronycta megacephala*. After an interval I returned about 11.30 to my car headlights to find four more *D. orion* including two females on the sheet together with a perfect specimen of *Cucullia gnaphalii*, besides a number of *Drymonia trimacula* and a host of Ermines. I then placed my lamp in the wood and was kept busy till 2 a.m. Two more *D. orion* arrived as well as several *Stauropus fagi*, including the dark form, also *Smerinthus populi*, one each of *Cerura bifida* and *Pheosia tremula* and a good many *Lithosia sororcula*, *Boarmia roboraria*, *Hylophila prasinana* and other common species. I hardly expected such a haul on such an unfavourable-looking night and my trip was far from in vain.

The second occasion in question was that of July 2nd, when I revisited Woodwalton Fen after having drawn a blank there the previous night owing to a thick mist. Mr. Mason kindly sugared the whole round of posts stretching on the east along the poplar avenue, thence along the main drove and past the hut. The night was cloudy with a light south-west wind. Insects began flocking on at once and I was kept more than busy from dusk till dawn, as I have seldom seen such a profusion, even more at 3 a.m. than at midnight. I estimated that there were at least 2000 insects on the 60 patches. Of the species which were in amazing numbers, the most remarkable were *Leucania impudens*, *Xylophasia monoglypha*, *X. lithoylea* and Grey Daggers, between one and two hundred of each. Hardly less numerous were *Noctua triangulum* and *Axylia putris*, while *Acronycta megacephala* and *Manestra persicariae* each reached about 60. Between 1 and 2 a.m. *Thyatira derasa* and *T. batis* appeared in unusual plenty, quite 40–50 of each. Among the 56 species I noted at sugar the more interesting included two *Palimpsestis octogesima*, one *Acronycta leporina*, one *Agrotis obscura (ravida)*, several *Aplecta advena*, *Hama adusta*, *Manestra thalassina*, *M. pisi*, *M. gemina*, *Apamea unanimitis*, *A. sordida*, *Xylophasia subulstris*, *Naenia typica*, *Senta maritima*, including one f. *bipunctata*, *Tapinostola concolor (extrema)*, *Leucania obsoleta*, *L. straminea*, *Dyschorista suspecta* and two *Toxocampa pastinum*. It was difficult to cope with such numbers. However, I managed to box a fine assortment comprising about 150 examples, my record number for a single

night.—C. G. M. DE WORMS; Milton Park, Egham, September, 1939.

THE INFLUENCE OF BIRD MIGRATION UPON THE DISTRIBUTION OF MIMETIC SPECIES OF LEPIDOPTERA.—In his criticism of the above paper (*Entom.*, February, 1937) Mr. Sevastopulo (*ibid.*, September, 1939) gives a general review of the species *Papilio polytes*, in which he speaks of the "male-like and red female forms" and later "the red form" (the italics are mine). As there are two quite distinct red female forms, the one discussed in the paper, i.e. the *hector* mimic, and the *aristolochiae* mimic, which is probably the most common ♀ form, it appears uncertain to which of those forms he refers, although I presume that it is the former and not the latter that he has found so commonly. If, then, it is the *hector* mimic and he could give definite information as to where it had occurred in the north, it would be in support of my statement that it is found well outside the range of the model. The three cases I dealt with differed in certain important respects, as will be seen from the headings which I gave, viz.:

(a) Occurrence of a mimic not only within, but well outside the range of the model. (Cramer's ♀ form *romulus* of *P. polytes*—*Papilio hector*.)

(b) Complete separation of the mimic from the model, the two never having met or overlapped. (*Aporia agathon*—*Danaus nil-giriensis*, and replaced further east by *D. luzonensis* and its forms.)

(c) An example showing in one species both of the above phases. (Form *philomela* of *Pareromia valeria* and of *pingasa*—*Danaus aspasia*.)

Mr. Sevastopulo does not appear to distinguish between these. He further states that "there is no large tract of country where the red form does not exist—the existence of such an area seems to be essential to the correctness of Dr. Rosa's theory." It will be seen that his assertion that a wide separation is essential in the case of (a) is not correct, or even any separation at all, and as the form must have originated in the south where the model exists, it must have travelled from there to the locality (Naini Tal) or localities in the north, so must have appeared at some time or times, in the course of its route, at all intermediate points.

Mr. Sevastopulo says "the occurrence of the red female forms is more likely to be due to gradual spreading—by interbreeding, than to the influence of migrant birds," but as far as I am aware I did not discuss how the butterflies reached the locality mentioned, or that migrant birds had anything to do with that, excepting that they would select those that they considered the most palatable for edible purposes. Had I been asked I would have said, either by propagation forwards or by migration of the butterflies themselves.

Mr. Sevastopulo thinks that because the *philomela* form of *Pareromia pingasa* Moore is not mentioned in Evans's 2nd edition, that it necessarily does not occur in South India, but in addition to the reference that I gave, Mr. Riley tells me that there is a specimen in

the British Museum from the Nilgiris (F. Moore collection), and Mr. H. A. Latham, lately Conservator of Forests, Northern Circle, informs me that he has taken the *philomela* form of *pingasa* at Kurnool in the Deccan, and until recently he had a specimen of it, now also in the British Museum (Natural History).—ALBERT F. ROSA, M.D., C.M., F.R.E.S.

MANX ENTOMOLOGICAL NOTES, 1939.—A fine male of the rare *Ichneumon primatorius* Forster was taken, together with two male *I. suspiciosus* Wesm., by K. W. near marshy ground on the Calf of Man on August 27th, 1939. Other insects of both species were seen. Mr. H. Britten and Mr. G. J. Kerrich (Assistant Keeper of Entomology at the Manchester Museum), who identified the specimen, have kindly given us notes on its distribution. Morley (1: 141) quotes Stephens as saying the females are rather common around London and about Hertford, but that he had only seen one male, which was taken in a Hertford garden at the end of May. It has been recorded from East Anglia (Kerrich), Lichfield (L. A. Carr, 1924) and Dorset (Haines, 1931), and there is a Welsh specimen in the Cambridge University Museum. It appears to be unrecorded from Scotland and Ireland. Of its recorded hosts only *Arctia caga* is known on the Calf, where it is common, but *Triphaena fimbria*, which was taken on August 11th four miles away at Port Erin by Miss E. Gibbs, of the Rothamsted Experimental Station, may occur. A third, *Catacola nupta*, is absent from Man. In view of the fact that Carr bred specimens in 1910–12 from "mixed *Triphaena* larvae," it should be mentioned that both *T. pronuba* and *comes* were taken on the Calf this year.

A female *Sirex gigas* was taken at a pine-wood at Tholt y Will, Sulby Glen, on August 7th by the Rev. E. C. Paton, and was sent to the Museum by Mr. C. I. Paton. Mr. H. S. Clarke recorded its probable breeding at Tholt y Will in 1896, when "numbers of these flies were seen"—a fact which this latest capture would seem to confirm. As there is a record of its parasite, *Rhyssa persuasoria*, from Dhoon Glen on the east coast (Dr. Cassall, 1906), *S. gigas* may also breed there.

Two *Herse convolvuli* have been reported this year, one on a cargo steamer at Castletown on August 18th (H. Leigh-Ley), and a fine female from Douglas on September 21st (D. Quirk), now in the Manx Museum. Three species of Lepidoptera new to the Manx list were recorded by W. S. C. as follows:

Carsia paludata Thunb.: One taken at Peel by Mr. Ernest Cowley, July 31st.

Ancyliis unguicella L.: Found numerously on the heath at the Point of Ayre by W. S. C. on May 29th.

Pandemis ribeana Hubn.: One taken at Douglas by W. S. C. on July 22nd, 1933, but not determined until this year.

Our thanks are due to Mr. Mansbridge of Liverpool for the determination of the "micros." A few new varieties were taken during

the season, including *minoides* Selys of *Zygaena trifolii* (Calf of Man, K. W.) and *sordidata* Fab. of *Hydriomena furcata* (Calf of Man and Peel, K. W. and E. Cowley).

As we are attempting to prepare lists of all Orders of Insecta recorded for the Island we would gratefully welcome, and readily acknowledge, any information which readers of the *Entomologist* might be able to give us.—W. S. COWIN and KENNETH WILLIAMSON; Manx Museum, I. of Douglas, Man.

FOOD-PLANTS OF *GONEPTERYX RHAMNI*.—I have always been puzzled by the appearance of *G. rhamni* in districts where apparently neither of the two species of buckthorn (*Rhamnus frangula* and *R. catharticus*) exists. Often this butterfly may be seen careering along streets and roadways of towns, and it commonly frequents suburban gardens, both in early spring and autumn, where no buckthorn can be found for two miles or more. I have on different occasions supplied hungry *rhamni* larvae in their various stages with the foliage of different plants, shrubs and trees, but none of these was accepted as food by the larvae. At present no other food except the two buckthorns seems generally to be known. But an interesting fact has just come to my knowledge, although known over 60 years ago. On casually turning to p. 141 of *The Entomologist* for June, 1885, I found the following interesting information, which is also continued on pp. 160, 231, 302, also p. 140 in *Entom.*, 1878. A correspondent asks, "Can you or any of your readers tell me any other food for *G. rhamni*, besides the two buckthorns *R. catharticus* and *R. frangula*?" The Editor (E. Newman) states, "I have said in *British Butterflies* that the two buckthorns are the only shrubs on which *rhamni* is known to feed." He adds that he had seen the females hovering over an exotic evergreen in his garden, but could not find they had deposited eggs. This was replied to by Mr. N. C. Tuely, stating that Dr. Boisduval in his *Species General* gives *R. catharticus*, *frangula* and *alaternus*; this last is an evergreen shrub, not found growing wild in the United Kingdom, but which has been extensively introduced into garden planting. Mr. Jenner Weir recorded finding larvae of *G. rhamni* on the variegated variety. Mr. Tuely says he had often seen females hovering about a shrub of *alaternus* in a warm corner of his garden, and on May 22nd, 1874, observed one deposit several eggs, and on June 22nd nine larvae were feeding on the young leaves, in various stages, showing that the eggs had not all been laid at the same time. "The variety *Cleopatra* is said usually to feed on *R. alaternus* . . ." "This variety and typical *Rhamni* have been stated to have been reared by Dr. Boisduval from one brood; whether this means from eggs laid by one female, or from larvae found on one plant, I do not know; if the latter, it would be no proof that they are the same species." [They are distinct.—F. W. F.]

On p. 231 of the same volume Mr. Owen Wilson states that neither species of *Rhamnus* grows wild in Carmarthen, and a resident well versed in botany, informed me that he had not seen a plant here, or

in North Wales, and that the butterfly, though scarce, is not infrequently captured. Again, on p. 140, *Entom.*, 1878, Mr. Tuely further says, "On sending a piece of *Alaternus* to the garden department of *The Field*, it was identified as *Maytenus chilensis*." Evidently the identification was wrong, as upon inquiry at the British Museum, I find that *Maytenus chilensis* D. C. belongs to the *Celastraceae* and is a native of Chili. It has nothing to do with *Rhamnus alaternus*, L., belonging to the *Rhamnaceae*, and indigenous to the Mediterranean region.

I mentioned the subject to Capt. E. B. Purefoy, as he has paid particular attention to both *rhamni* and *cleopatra*, having studied both most of his life. He has kindly given me the following interesting notes: "I put down *rhamni* in 1894 in Tipperary, having previously introduced the two indigenous buckthorns and also *alaternus*, *alpina* and several others; all of them used to receive their quota of ova. *rhamni* wanders for many miles. I remember reading of two youths who marked a female with ink and followed her on bikes for over three miles as she deposited in the hedges. My Irish *rhamni* were several times reported a county or two away." He also tells me he has a lot of *alaternus* growing in his garden and *rhamni* larvae were feeding on it this year. "I put down *cleopatra* in Tipperary in 1902, but did not then realize that the larvae cannot stand even 1° of frost. The females are quite hardy and hibernate through any amount of frost." In his garden in Kent he kept them going for 14 years. He says, "The point to remember about the species is that they pair at once. This, I believe, is denied by some people." It has been stated that *rhamni* will feed on the foliage of apple, pear and medlar, but in others' opinion, and my own experience, they will rather starve than attempt to feed on anything but the different species of *Rhamnus*.—F. W. FROHAWK; October, 1939.

A NEW NAME FOR AN AFRICAN BEE.—*Halictus hessei* n.n. for *H. georgicus* Cockerell, not Blüthgen. It is named after A. J. Hesse of Cape Town, who wrote a most excellent account of the Bombyliid flies obtained by our expedition. This homonymy was discovered by Miss Grace Sandhouse. Blüthgen's *H. georgicus* was published in *Mitt. Zool. Mus. Berlin*, dated Sept. 1, 1936, but received in Washington Jan. 19, 1937. My *H. georgicus* was published in *African Bees of the Genera Ceratina, Halictus and Megachile*, dated 1937, and received at Boulder, Colorado, Feb. 9. There seems to be no doubt that Blüthgen's name has priority. In the same volume I refer to *Megachile heterotricha* Cockerell, 1920, remarking that Cameron named a species *heterotricha* from India, but I did not know of its publication. My knowledge of the Indian species was derived from a study of the type in the British Museum. Miss Sandhouse has found Cameron's description, dated 1909, but the species is given as *M. heterotrichia*. As the difference of a letter prevents homonymy, I conclude to let the matter stand as it is, although it appears very probable that *heterotrichia* was a slip for *heterotricha*.—T. D. A. COCKERELL.

RECENT LITERATURE.

The Plague of Locusts. By MALCOLM BURR. Oxford University Press. 8d.

This 52-page booklet is one of the Simple Science in Simple English series, based on a standard vocabulary of 1500 words. One curious result is that such everyday words as "stomach," "jaw," "beak" and "poison" have to be defined in footnotes; a threadworm is illustrated by a drawing of an earthworm, and a wasp grub by what appears to be a cockchafer larva. Apart from this, it is remarkable how well the story is told with such a limited choice of words. The first chapter introduces the locust swarm; the second tells the life history of a locust, and is indeed an excellent "first step" in insect morphology and development; the third describes the habits, phases and swarming of locusts; and the booklet closes with an account of the control of locusts by man, by insects and birds, but chiefly by the Locust Committee, upon whose work indeed the whole is largely based. The scene is set in Africa, where the booklet may well serve a double educational purpose; of its kind it is certainly good.

Wings in the Sun. By L. HUGH NEWMAN. E. J. Arnold & Son, Ltd. 1s.

This also is a children's book, and is No. 29 in the Broadcast Echoes series. Its 94 pages of large type are illustrated by a few good reproductions of photographs of butterflies, larvae, etc., in living attitudes. As the picture of the Orange Tip shows, a butterfly is often a difficult subject for the camera until it is "set." The text is good. It is in the colloquial style of a broadcast talk, never suffers from the stilted mannerisms of so many "popular" books, and shows the author to be a real enthusiast who does not mind being at times unconventional. There are many refreshing observations on the habits of butterflies which show how closely Mr. Newman watches his subject. One cannot blame him if at times he lays a rather heavy emphasis upon the cult of the "rarity," for after all is not that the mainspring of most collectors' activities?

OBITUARY.

EDWIN JOHN MILMAN.

Edwin John Milman was born on September 30, 1853, and died on February 4, 1940. His hobbies were Lepidoptera, conchology and horticulture, and he was an acute observer of the behaviour of insects, often forecasting a storm by the peculiar behaviour of moths, when he would warn nearby campers. One of the first to breed *Laphygma exigua* from ova, he was also fortunate in taking many rare migrant

species, the best probably being a fine *Hyppena obsitalis* Hb., recorded in the *Entomologist* of February, 1917. Many who enjoyed the sugaring grounds of Paignton before they were built over will remember his kindly humour and his readiness to help them take a fair number of local or migrant wants.—P. P. M.

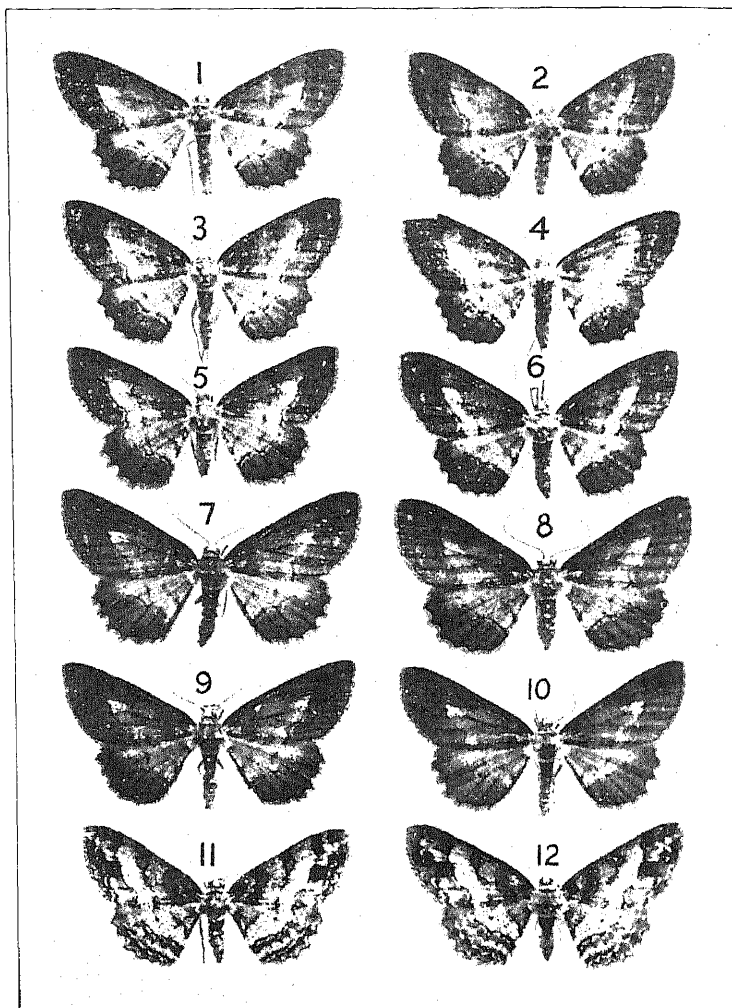
SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 24, 1939.—Mr. F. Stanley-Smith, Vice-President, in the Chair.—Mr. T. R. Eagles exhibited, on behalf of Dr. Robertson, of Storrington, Sussex, the Longicorn beetle *Prionus coriarius* taken in his garden; Mr. V. E. August, (1) *Attacus atlas* bred from Singapore, (2) *Euphydryas aurinia* bred from Buckingham, (3) *Euchloris smaragdaria* bred from ova found at Benfleet last year, and (4) *Melitaea cinxia*, taken in the I. of Wight, July 16, 1939; Mr. D. H. Sterling, larvae of *Samia cecropia* from N. America, and a full-grown larva of *Theretra porcellus*, which had retained the green coloration of the earlier stages; Mr. C. N. Hawkins, the larva of *Euclidia glyphica*, with a blown larva of *B. mi*; Dr. K. G. Blair, (1) an old gall of *Saperda populnea*, occupied by a Crabronid, *Rhopalum clavipes*, and found packed full of Psocids of two species, (2) *Coccinella 7-punctata*, with cocoon of parasite, *Dinocampus terminatus*, attached, and (3) an egg-cocoon of a spider with parasite, *Pimpla oculatoria*, reared from it; Dr. G. V. Bull, a very dark form of *Agrotis vestigialis*; Mr. R. W. Attwood, the bright orange-yellow ♀ form *flava* of *Agapates galathea*, from Benfleet; Mr. F. D. Buck, a series of *Broscus cephalotes*, from Poole Harbour, and gave notes on its habits and capture.

November 4, 1939.—Mr. F. Stanley Smith, Vice-President, in the Chair.—This was the first meeting to be held in the new meeting place, The Chapter House, St. Thomas St., Borough, and some 60 members were present. Mr. Wallis-Norton exhibited hibernating larvae of *Hipparchus papilionaria* from ova, and a series of *Lithosia griseola*, including ab. *flava* (*stramineola*); Mr. Andrews, the local Diptera, *Prophyrops antennata* and *Thinophilus flavipalpis*; Mr. Coote, the Psychid *Taleporia bombycella* bred from Abbots Wood and remarked on the classification of the Psychidae, also *Comibaena pustulata* (*bajularia*) from the Liphook Field Meeting; on behalf of Mr. Frohawk, Mr. Costa exhibited two *Aglais urticae* ab. *nigra* from E. Farleigh, *Euchloe cardamines* ab. *maculata-punctata* from Broadstairs and a gynandromorph from Swindon, and *Colias croceus* ab. *pallida-obsoleta* from Broadstairs; Mr. J. O. T. Howard an intersex and ab. *pallida* of *Malacosoma castrensis* and bred females of Cornish *Cosmotriche potatoria*; Dr. G. V. Bull, ab. *unicolor* of *Malacosoma castrensis* from N. Kent and the Ichneumon *Rhyssa persuasoria*; Mr. T. R. Eagles, egg parasites of *Amorpha populi*, *Ptinus tectus* (Col.) infesting fish-foods, bred *Agrotis agathina* and *Palimpsestis fluctuosa*; Mr. G. B. Oliver, a *Colias croceus* with hind wings approaching ♀ form *helice*

in colour, and colour aberrations in the hind wings of *Argynnis cydippe* of Sussex origin; Mr. Buckstone, various bred and captured forms of *Polygonia c-album*, and gave notes on the variation, and aberrations of *Vanessa cardui*, *Polyommatus icarus*, *Lysandra bellargus* and *L. coridon*; Mr. Syms, the earwig *Apterygida albipennis*; Mr. Wakely, a varied bred series of *Nonagria sparganii* from the I. of Wight, and a yellow *Pieris napi*; Mr. Burton, larvae of *Perizoma taenata*, N. Lancashire.—HY. J. TURNER (*Hon. Editor of Proceedings*).

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 21, 1939.—The President, Mr. G. de C. Fraser, in the Chair. Exhibitional meeting of the past season's work. Mr. H. Driver brought a large exhibit, comprising a bred series of *Triphaena fimbria*, *Taeniocampa munda*, *Panolis griseo-variegata*, *Hepialus fusco-nebulosa* and *Brephos parthenias* from Delamere; *Timandra amata*, *Plusia pulchrina*, *P. festucae* and *Nemora strigata* from Barnston, Cheshire; *Coenonympha tullia*, *Melanthia albicillata* and *Nemoria viridaria* from Witherslack; *Argynnis paphia* and var. *valesina* from the New Forest; a nice series of *Lysandra coridon* and *Thymelicus acteon* from Swanage; and *Eupithecia subfulvata* from Rockferry, Cheshire. Mr. S. Gordon Smith exhibited a beautiful series of *Pieris napi* var. *citrona* bred from Donegal parentage; *Euphydryas aurinia*, a long series from Monmouth, Somerset and Dorset; *Callimorpha dominula* and forms with the usual white spots orange coloured; *Boarmia repandata* and var. *nigra* from Gloucestershire, Burnt Wood and Delamere; *Tephrosia consonaria* from Symonds Yat; *Polyommatus icarus*, very blue females from Gloucester and Dorset and a gynandrous specimen from Dorset; bred examples of *Ortholitha cervinata* from Heswell, Cheshire; *Angerona prunaria* from Burntwood; and *Lycia hirtaria* from Aviemore. Mr. S. P. Doudney showed *Phragmatobia fuliginosa*, *Odontotia carmelita*, *Fidonia carbonaria*, *Anarta cordigera*, *A. melanopa* and *Taeniocampa gracilis*, red forms, all in nice series from Rannoch; *Endromis versicolor* from Aviemore; *Dilina tiliac* bred from Surrey pupae; *Pachnobia leucographa* series bred from Witherslack; *Cleora jubata* from the New Forest; *Argynnis paphia* and *Scotosia rhamnata* from Symonds Yat; and *Boarmia roboraria* from Sussex. Mr. W. Mansbridge showed *Triphaena comes* and vars. *interposita*, *curtisii* and *nigra* bred from ova deposited by a black female from Forres; also forms of *Cidaria immanata* bred from females captured in Glen Affric. Mr. B. B. Snell's large exhibit comprised *Boarmia cinctaria*, this being the second specimen recorded from Perthshire, *Selenia tetralunaria*, *Mamestra glauca*, *Plusia bractea*, *P. interrogationis*, *Anarta cordigera*, *Peronea maccana*, *Phloodes crenana* from Rannoch; *Triphaena fimbria*, red forms from Delamere; series of *Cucullia asteris* from Dolgelly; *Limenitis camilla* (sibilla), *Stauropus fagi*, *Palimpsestis octogesima*, *Xylophasia hepatica*, *Hydrochroa syringaria* and *Boarmia roboraria* from the New Forest; and a variable series of *Tortrix postvittana* bred from *Veronica*, *Euonymus*, etc., from Cornwall.—WM. MANSBRIDGE, *Acting Hon. Sec.*



H. Eltringham, photo.

Adlard & Son, Ltd.

Tephrosia consonaria ab. *waiensis* nov.

THE ENTOMOLOGIST.

VOL. LXXIII.]

APRIL, 1940.

[No. 923

A NEW ABERRATION OF *TEPHROSIA CONSONARIA* HÜBNER (LEP. GEOMETRIDAE).

BY AUSTIN RICHARDSON.

(Plate I.)

Tephrosia consonaria ab. *waiensis* nov.

Type specimens, ♂ and ♀ (Plate I, figs. 1 and 2). All wings: Terminal area occupied by a band of deep sepia, approaching black, which extends as far as the post-median line from which it is separated by a narrow white line. There are also traces of a white sub-terminal line and a more distinctly defined pale sub-marginal line. Basal area clouded with sepia. Median band silvery-white, lightly speckled with sepia except along the costa where the basal clouding extends. Discal mark on hind wings sepia. Cilia pale sepia. Head, thorax, abdomen and legs: Markings typical in arrangement, but deeper in colour. Size typical.

I took last year, 1939, a number of specimens of this beautiful and hitherto undescribed aberration in a restricted area of the Forest of Dean, where it was discovered in 1938 by Dr. and Mrs. Lowther, of Grange-over-Sands, who kindly gave me the locality. Dr. Cockayne tells me that the only previous record is that of a female taken by Mr. Rayward in the Wye Valley, from which four additional specimens were bred.

In about 100 specimens of *T. consonaria* examined the proportion of this aberration to normal specimens appeared to be in the neighbourhood of 4 : 7. The aberration occurs in both sexes and is distinctly variable, particularly in the basal and median area of the fore wings, where the sepia clouding varies considerably in extent. In extreme specimens there remains only a silvery spot in each fore wing, situated at the outer angle of the cell. The clouding, however, is not nearly so uniform as in ab. *nigra* Bankes, recorded from Kent and also occurring in another part of Gloucestershire, and the head and thorax are comparatively typical. The extent of the variation will be seen from figs. 1-10 of the accompanying photograph which Dr. H. Eltringham has been good enough to take.

There were also present about 15 per cent. of a very strongly marked form, especially in the females, of which two are shown in figs. 11 and 12. The markings, though typical in arrangement, approximate in colour to ab. *waiensis*, giving a distinctly black and white effect. I obtained ova from a bright female found paired on a trunk with a male ab. *waiensis*, and have resulting pupae.

Beautesert Park, Minchinhampton, Glos.

BRITISH GALL-CAUSING CYNIPIDAE.—III.

BY M. NIBLETT.

THE following notes dealing with the occurrence of the galls and the emergences of the insects are the result of further work I have done upon the gall-causing *Cynipidae* affecting plants other than the oak since the publication of my previous paper (1).

Rhodites rosae L.—Galls of this species I have found on *Rosa canina* L. in 45 localities in Surrey; also in Kent, Sussex and Hampshire. Have noted them on *R. rubiginosa* L. in some numbers, also with less frequency upon *R. micrantha* Sm. and *R. arvensis* Huds. May 16 is the earliest date of emergence I have had.

R. eglanteriae Htg.—Of this species I have had galls on *R. canina* from many localities in Surrey, also from Suffolk, Isle of Wight, Hants, Kent and Middlesex. Galls to the number of 120 were collected at Eynsford, Kent, and from these emerged 10 *R. eglanteriae* in June; 20 *Orthopelmar luteolator* Grav. in May, June and July; 112 *Perichistus caninae* Htg. in July and August. All previous emergences of this gall-wasp have been in May except on one occasion, when two specimens emerged on July 7. *R. micrantha* and *R. arvensis* have also yielded a few galls of this species; on *R. rubiginosa* and *R. spinosissima* L. I have found them plentiful, *eglanteriae* emerging from the former in May and from the latter in June.

R. nervosus Curt.—I mentioned in my previous paper (1) that I had failed to breed out this insect; I have since succeeded by having four emerge on 11.vi.33, 24.iv.34, 31.v.34 and 7.v.39 respectively. The gall never appears to be plentiful, but from 1925 to 1939 I have had quite a number from 16 Surrey localities, Southwold, Suffolk, and Eynsford, Kent. These have yielded, in addition to the four *nervosus*, 138 parasites and inquilines. All the galls of this species I have found have been on *R. canina* except once, when a number were found on *R. arvensis* at Ashtead, Surrey.

Diastrophus rubi Bouché.—The galls of this species do not appear to occur very frequently. Parasites are usually much in evidence, but the gall-wasp appears to emerge in considerable numbers; from one series of galls I had emerge 42 *D. rubi* and 22 Chalcids, while from another 59 *rubi* and 86 Chalcids emerged. Both Cynipids and parasites emerged during the same period, from early May to early June.

Aylax caulicola Hedicke.—Since the discovery of this species (2) I have carefully examined stems of its host-plant, *Picris echioides*

L., in various Surrey localities, but have not yet found any sign of its galls.

Liposthenes latreillei Kieff.—The galls of this species appear to be rather local but fairly plentiful where they do occur. I have them from Boxhill, Kingswood, Ranmore Common, Mickleham, Epsom Common and Banstead Wood in Surrey; from Wendover, Bucks; and Benfleet, Essex. The insect I have had emerge from early March to early April of the second year.

Isocolus rogenhoferi Watchl.—As previously stated (1), this species emerged in June and July of the second year, but fresh galls found in September had emergence holes in them. On 17.viii.37 I collected several galls at Eastbourne; from these two *rogenhoferi* emerged on August 25 and two on September 12, while two emerged in the following July. From several taken in the same locality in August, 1939, Chalcids emerged in that month. I had assumed that the holes in fresh galls were caused by Chalcids, having had them emerge in the first year previously, and was greatly surprised to find the gall-wasp emerge in the autumn of the first year.

I. jaceae Schenck.—Looking through my records of this species I was rather surprised at the high percentage of emergences; I have found in all 49 galls from which 48 *jaceae* have emerged. These were obtained from some hundreds of flower-heads of *Centaurea nigra* L., each of which was pulled in pieces and the contents carefully examined for the galled achenes. The localities from which they came are Colley Hill, Banstead Downs, Epsom Downs, Park Downs, Riddlesdown, and Fetcham in Surrey; and Sandown, Isle of Wight.

I. scabiosae Gir.—I have not found many galls caused by this species, Epsom Downs, Ashted, Woodmansterne, Dorking and Woldingham in Surrey being the localities. The gall-wasps emerged in July of the second year; Chalcids, which were pretty numerous, emerged in April, May and July of the same year.

I. fitchi Kieff.—I have only found galls of this species on two occasions, several being found at Epsom Downs, 18.viii.34, and several near Dorking, 21.viii.37; from these I failed to breed the gall-wasp, two Chalcids only emerging in the following July from the first-mentioned series.

Aulacidea hypochoeridis Kieff.—I have now had this species emerge in May of the second year. The gall is far from common, although its host-plant, *Hypochoeris radicata* L., is very widespread. I have noted small colonies at Riddlesdown, Croham Hurst, and Epsom Downs in Surrey; at Peacehaven, Sussex; Benfleet, Essex; Brockenhurst, Hants; and East Cowes, Isle of Wight.

A. hieracii Bouché.—This appears to be another local species. Galls have been found at Chilworth, Wimbledon Common and Walton

Heath in Surrey; also at Benfleet, Essex. Ten small to moderate-sized galls taken at Walton Heath yielded 89 specimens of *hieracii* and 84 Chalcids; these all emerged in June of the second year.

A. pigeoti Kieff.—This is, as far as my experience goes, very local in its occurrence. I have found the galls only at Riddlesdown, Woodmansterne and Epsom Downs. The Cynipid I have had emerge in June and July of the second year, with Chalcids in May, June and July of the same year. From one series of galls 70 *pigeoti* and 18 Chalcids emerged.

Phanacis centaureae Forst.—In spite of statements that the gall of this species is visible as a slight swelling on the stem, I have yet to discover these swellings; the gall consists of the hardening of the pith round the larval cavity, usually adjacent to the stem-wall of the host-plant. The best method to ascertain if the plant is galled is to split open the stem with a knife when the galls if present will be disclosed. I have not searched for it in many localities, but in those where I have it appears to be very plentiful, and also to persist in spite of the fact that parasites are much in evidence. From some stems of *Centaurea scabiosa* L. collected on Epsom Downs there emerged the following year 200 Cynipids in early June, 13 Chalcids in May and 50 in June. The majority of *centaureae* that I have bred have emerged in June, but I have had the insect emerge in July. *P. centaureae* also galls *C. nigra*, occupying the same position in the stems of this plant. The Cynipids I have bred from *nigra* have all emerged in June.

Cynipid sp.—In the summer of 1934 I found a number of plants of *Hieracium pilosella* L. with the flower-stalks swollen, the galls resembling those of *A. hypochoeridis* in miniature; they contained Cynipid larvae but I only bred two Chalcids from them, these emerging in August, and I have failed to find any of the galls since. I believe that a similar gall was found on this plant in Silesia about 1890, but no insect was bred.

REFERENCES.

- (1) NIBLETT, M. (1933).—*Entomologist*, 66.
- (2) *Idem* (1939).—*Proc. Roy. Ent. Soc.*, 45.

10, Greenway,
Wallington, Surrey.

EARLY BUTTERFLIES.—*A. Nymphalis io* was observed flying in the New Forest on January 8, 1940, and on February 24 the first male *Gonepteryx rhamni* was seen. As we have been experiencing such exceptionally cold weather since the middle of December these appearances seem rather surprising.—MILDRED C. REID; Bower Holme, Lyndhurst, Hants.

WINTER RIVIERA BUTTERFLIES, 1938-39.

BY LT.-COL. N. ELIOT, C.B.E.

IN the *Entomologist* (71 : 79, and 72 : 35) are printed tables showing on how many days from autumn to spring 1936-37 and 1937-38 various butterflies were present in my garden at Cavalaire on the French Mediterranean coast, except that in both tables, owing to absence, there was a blank at the critical period of the New Year.

In 1938-39 observations were continued through these critical days, *vide* the following extract from the table for the complete period, which otherwise does not differ sufficiently from that for 1937-38 to justify printing in full :

Month.	Dec., 1938.			Jan., 1939.		
Quarter of month . . .	B	C	D	A	B	C
Wet or overcast days . . .	5	6	1	1	4	4
Sunny days' observation . .	3	2	6	7	4	4
<i>Vanessa cardui</i>	2	—	3	1	—	2
<i>V. atalanta</i>	3	1	6	7	3	4
<i>Pararge aegeria</i>	1	—	—	—	—	1
<i>P. megera</i>	3	1	2	2	3	3
<i>Lycaenopsis argiolus</i> . . .	1	—	—	—	—	1
<i>Colias croceus</i>	3	1	5	7	4	4

The second quarter (B) of December had remained warm, with average minimum night and maximum day temperatures of 50° and 57° F., but the third quarter brought a drop to 38° and 46° F. (average) respectively, with three nights of frost, 29° F., accompanied by ice in puddles and tender plants touched. Thereafter the temperatures rose fairly steadily to averages of 48° and 54° F. in the third quarter of January. Here the chief point of interest is the addition of *Pararge megera* and *Vanessa cardui* to the two butterflies, *Vanessa atalanta* and *Colias croceus*, which normally fly through the coldest period of the winter. On the other hand as compared with the previous year, *Macroglossum stellatarum* was in 1938-39 more conspicuous by its absence than its presence, not being seen between December 4 and January 19. Hibernated *Gonepteryx cleopatra* appeared on January 23.

Although there was no significant difference in the temperatures recorded from the middle of October there was a great difference in the rainfall of autumn, 1938, as compared to the two previous years, the rain starting exceptionally early (August 28) and giving a total

of 10.43 in. by the end of September, whereas October (.74 in.) and November (1.15 in.) were dry and sunny. As a consequence low herbage started early into lush growth and various winter-flowering plants, such as the creeping groundsel, were over three weeks or so earlier than usual. Whether as the result of this early rejuvenation of vegetation after the summer drought or not, a number of species showed emergences which were either later or far more marked than in the previous years; *Lampides boeticus*, which apparently had been emerging shortly before my arrival on October 14, was not abnormal except that it was somewhat numerous. *Syntarucus pirithous* last brood emerged in numbers about mid-November, with a last survivor on December 14. Fresh *Colias croceus* appeared in the first half of November, when *Lycaena phlaeas* also emerged to fly until December 6. Fresh *V. cardui*, almost certainly not immigrant, appeared in the first few days of December, playing about and feeding greedily; and finally there was an emergence of a few *P. megera* in mid December. The "spring" emergence of *megera* commenced about January 23, and by the end of the first week of February the numbers flying had reached a maximum nearly up to last year's.

After January 23 no *cardui* were seen, except for a faded individual on March 1, until April 3, when specimens in good condition appeared and continued to be seen until May 8. These were very probably locally bred, our abundantly common thistle (*Galactites tomentosa*, a biennial) having been well up since the beginning of November. What were obviously immigrant *cardui* appeared on May 18. One of these interested me as it had the costal margin and, apparently, vein 8 of the left hind wing broken off, giving no support to the fore wing, and the left antenna missing to within a tenth of an inch of the head, but for all that the insect had not lost the zest of life; it fed happily on the flower of its choice, flew up into the air moderately well, circled around and settled again to feed, and so on repeatedly.

It was noticeable, during the cold spell, that *V. atalanta* and *V. cardui* (when present) were the first to fly, at about 10 a.m. with a temperature of 48° F. rising, whereas *P. megera* and *C. croceus* did not appear until nearly an hour later, *megera* first, temperature about 50° F. This on days of bright sun; on hazy though no colder days *croceus* flew before *megera*.

Comparison of the extract herein with the previously published tables shows a far shorter interval between last and first *Pararge aegeria* and *Lycaenopsis argiolus*. This may well be due to the same cause as the late emergences. Then on April 6 a freshly emerged *Carcharodus lavatherae* was found drying its wings on top of a half dead lavender spike. I bent the stalk to examine the underside,

whereupon it flew a few yards to another perch. This is freakishly early, and no other individual was seen until mid May, the usual time of emergence: see also General Cooke's article, *Entom.*, 59 : 210-219. On April 1 my son saw a female *Colias hyale*, possibly a rare instance of the insect breeding in the winter on the coastal strip. General Cooke gives April 23 as his first seen; and on April 10 I went up to 4000 ft. on *hyale* ground in the foothills of the Basses Alpes (Alpes de Provence) and saw none, though *Erebia epistygne* and *Glaucopsyche melanops* were out. A first *Ipichlides podalirius* flew on March 1, but the species was not seen again until the 16th. *Papilio machaon* appeared on March 2 and was as common as *podalirius*, if not more so. The temperatures from February to June, 1939, were very similar to those of 1938, as was the distribution of rainfall, although in 1939 it was only about half as copious. As stated before, the appearances of butterflies followed a very similar course, an exception being that hibernated *Nymphalis antiopa* both appeared and flew a month later than usual, from April 12 to May 23, with a somewhat uncertain identification on June 1. General Cooke found none of the summer brood of *antiopa* anywhere in 1925 and, as remarked in my first article, this insect apparently does not breed on the coastal strip. Hence the quite respectable numbers there in the spring have presumably spread from more northerly regions after hibernation, which this year may have been unusually prolonged, heavy falls of late-lying snow having taken place in the mountains. *Nymphalis polychloros*, which breeds locally, showed nothing unusual in its times of appearance and flying after hibernation, and of re-emergence. On June 18, three days after the start of my run back to England, I saw two *antiopa*, so white-edged as to be undoubtedly hibernated, at between 3000 and 4000 ft. elevation in the valley between the Belledonne and Grandes Rousses mountains, near Grenoble.

In May, 1937, *Hemaris bombylifformis* was seen settling to feed on Buddleia (*Entom.*, 71 : 78). In October, 1938, the same bush was flowering profusely while *Macroglossum stellatarum* was common, and on seven occasions I watched this moth feeding there without its showing the least disposition to settle. Unfortunately in the spring of 1939 the bush flowered so late that the "Bee" had become scarce, but on April 18 I had the luck to see both species feeding simultaneously on the foot-long blue spikes of the Pride of Madeira (*Echium fastuosum*). *Stellatarum* fed at the full length of its proboscis, with its body held nearly horizontal and its legs, as far as I could see, tucked close to its body. The "Bee" while feeding hovered at a steeper angle, often nearly vertical, with its front pair of legs stretched forward so as to claw on to the flower, the other two pairs of legs being loosely folded, so that the shank

trailed slightly below the body. This manner of steadying itself, with wings vibrating, appears to be the normal habit, but I also once watched it feed on a densely flowered *Mesembryanthemum*, a plant not usually attractive to it. Here it "scrambled" with all six legs on the narrow shiny petals of the flat 2-in. discs, and its wings came to rest, although never for longer than a second or so, about once out of every three or four of the moth's brief visits to individual flowers.

YELLOW PIERIDAE URGENTLY WANTED.—For purposes of research on the nature of the yellow pigments of Pieridae Sir Frederick Gowland Hopkins is in need of several hundred mixed species of fairly large size, including if possible about one hundred *Colias*, for choice. Sir Frederick will, I hope, forgive me if in explanation I quote from his last letter as follows:

"I think when first writing you I did say a few words about the history of the subject since I published my early work on these pigments fifty years ago. Perhaps I may add a little. It was untouched for thirty years when Wieland of Munich, a very distinguished organic chemist, took it up again, and he, with many colleagues, put an amount of enterprise into the work which, considering its apparently academic nature, has been quite astonishing. The Minister for Education in Bavaria, for instance, ordered the heads of all schools in that country to collect for Wieland, with the result that the latter confessed in 1933 that he had by then handled a quarter of a million *P. napi*, and many thousands of coloured pierids. In spite of this, even up to now, the precise constitution of the yellow pigment remains uncertain. But the German workers missed the significance of facts that I made known in 1895, and it is the proof of their significance which is now occupying me. It is far from being a war job, but at my age I cannot find one. To-day it is, however, not merely academic. Since it is claimed that these pigments are present in mammalian tissues and have something to do with blood formation, they may well be of wide importance; but until their constitution is more definitely known, this claim remains uncertain."

The condition of the specimens is largely immaterial. They will serve their purpose quite well if simply pushed off their pins into a cardboard box. It will be an advantage, however, to keep the species separate. Would any collector having even a dozen or two *Colias*, *Gonepteryx*, *Catopsilia*, *Terias*, or other predominantly yellow Pierids that he doesn't want please send them either direct to Sir Frederick Gowland Hopkins, University of Cambridge School of Biochemistry, Sir William Dunn Institute, Tennis Court Road, Cambridge, or, if it is more convenient, they can be left for me at the Museum and I will be glad to forward them.—N. D. RILEY; British Museum (Natural History), London, S.W. 7.

BRITISH LEPIDOPTERA COLLECTING, 1939.

BY C. G. M. DE WORMS, PH.D., F.R.E.S.

APART from finding near the Hog's Back stems of *Viburnum* containing borings of *Sesia andreniformis*, no other collecting was attempted before March, which opened with a mild spell. On the 4th *Hybernia marginaria* was in abundance at rest on twigs in Swinley Forest, producing some very dark forms. The next evening I accompanied Mr. Dudley Marsh to Effingham, where *H. rupicaprararia* was sitting about in numbers on the sloe bushes, but no females were in evidence. A further visit to Swinley on March 12 with Messrs. Marsh and Bowes yielded the all-brown *H. marginaria* f. *fuscata*, which had not been noted before in the district.

The first long-distance trip of the year I made with Mr. A. G. B. Russell to Vert Wood, Sussex, on the 16th, a very warm night when insects at light included *Apocheima hispidaria*, *Pachys strataria* and *Polyphoca flavicornis*. Owing to the earliness of the season I motored to Gloucestershire on March 18 to stay with Mr. Austin Richardson. That night we went over to the Wye Valley where the sallows were already well out and patronized by most of the common *Taeniocampids*. We were surprised to take a *Pachnobia leucographa* at this date. On my way home on the 20th light near Ascot brought a lot of *P. flavicornis*, among which was a remarkable female with a melanic body and thorax and having dark-brown bars along the costa and at the base and apex of the fore wings. A cold snap which set in at the end of the month prevented profitable night work till I visited the Ashford area on April 1. Very little appeared on the sallows till the temperature rose about 11 p.m., when insects began to swarm, including all the common spring Noctuae with a predominance of *Taeniocampa miniosa*, *T. populeti*, *T. munda* and *Pachnobia rubricosa*. The following night in the same locality there was an equally good assortment of species on the blooms.

On the 4th Mr. Morley and I went over to Effingham, where he got a good series of *Aleucis pictaria*, and later in the evening we beat several *Panolis piniperda* from sallow near Ascot.

Scotland once more attracted me over the Easter period. Reaching Struan by train early on April 6 I quickly set to work along the railway in ideal weather, and it was not long before I came across the first male *Nyssia lapponaria*. This species was just coming out and proved to be very plentiful. Both sexes were to be picked up at short intervals on the posts, and I soon completed

my series. Some very well-marked *Polyphoca flavicornis* and *Lobophora carpinata* were also to be had on this ground. The next day I went to Rannoch, but finding little there, I joined Messrs. Peyton and Bowes in the evening at Struan, where they had just taken a number of *N. lapponaria* flying (*vide Entom.*, 72, 232). Night work there was very poor, apart from larvae of *Aplecta tinctoria*.

I moved on to Aviemore on the 8th to find this resort already well stocked with collectors. Not much of interest was seen there that night, but an improvement in the weather on Easter Sunday was a good augury for light, to which moths began coming freely. By 2 a.m. no less than 31 male *Brachionycha nubeculosa* had been observed at five pitches among the large birches. *P. flavicornis* was equally abundant, while sap runs attracted many *Taenio-campa incerta*, *T. gothica* and the Swordgrasses. The following day Mr. Peyton and I motored to Forres, where searching the sandhills till a late hour did not disclose as many larvae of *Triphaena comes* as we had hoped for. Back at Aviemore on April 11 we saw the first *Endromis versicolor* and *Lycia hirtaria*. In the sunshine *Brephos parthenias* was very common both on the wing and at sap, while larvae of *Aplecta tinctoria* were to be found everywhere on the small birches about midnight.

Returning south on April 12, my next outing on the 15th took me to Birmingham on a visit to Sir H. Beckwith Whitehouse. That night we went over to Wyre Forest near Bewdley. In spite of fairly mild conditions, the chief insects at light were only *Taenio-campa miniosa* and a single *Polyphoca ridens*. The next afternoon we visited Sutton Park on the outskirts of Birmingham and found at rest on pines several *Tephrosia bistortata* f. *delamerensis*. Sir Beckwith also showed me some very melanic *Hybernia marginaria* he had taken in that district. On my way home I tried lamps in Stanton St. John woods, near Oxford, but again *T. miniosa* was the only moth in evidence.

I was once more in the Ashford area on April 20. *T. populeti* was still fresh at fallow, while at light the most interesting insects were *Polyphoca ridens* and *Pachys strataria*, of which Mr. Wallis Norton, whom I met, had just obtained a remarkable albinistic specimen. On April 22 I made the first trip of the year to the New Forest, in company with Mr. N. G. Wykes. On the way we halted at Alice Holt Forest, Farnham, and spent several hours searching for young larvae of *Limenitis camilla*, of which we found a good number at rest on the stems of the spiral honeysuckle. Their whereabouts was quite easily detected by the characteristic bites in the leaves. Proceeding to Brockenhurst we tried light in Denny Wood, but our only visitors were a female *Drymonia chaonia* and *Boarmia cinctaria*. The following night, which was very cold, did

not produce any red *Taeniocampa gracilis*, for which we searched the bog myrtle near Rhinefields.

On April 30 I motored to Leicester, where Dr. Lisney kindly conducted me to a good locality in that area, but our only capture was a number of *T. gracilis*.

The cold period continued well into May, and the only insect attracted on a further trip to Ashford (Kent) on the 4th was a fresh *Odontesia carmelita*. On the 7th I was once more in the New Forest where many insects were on the wing along the railway near Brockenhurst, including *Pararge aegeria*, *P. megaera*, *Erynnis tages* and *Anaitis plagiata*. *Haemorrhagia fuciformis* was about along the embankment, a somewhat early date for this species. No further collecting was carried out till my return from a tour of Denmark on May 21. Swinley Forest was very productive on the night of the 23rd. Moths at light comprised *Notodonta trepida*, *Pygaera curtula*, *Drepana lacertinaria*, *Boarmia consortaria*, and there was a host of larvae of *Xanthia citrigo* on the limes. The next evening sport was equally good in the Kent woods. On this occasion the catch included all the above species as well as *Dicranura vinula* and *Anticlea nigrofasciaria*.

There were plenty of butterflies at Chiddingfold on May 27. Though *Argynnis euphrosyne* was not so numerous as usual, *Leptidea sinapis* was, if anything, commoner. Later that day I travelled to Wicken, which was to be my headquarters for the Whitsun holiday, but only *Meliana flammea* and *Arsilonea albovenosa* turned up at the sheet that night. The next afternoon I went over to Peterborough, where Mr. Pooles kindly took me to a noted haunt in the vicinity where *Carterocephalus palaemon* and *Hamearis lucina* were in larger numbers than I have ever seen them. We then proceeded to the locality where we found *Hydriomena ruberata* in 1938. On this occasion it was more plentiful on the osier trunks and in better condition. Whit-Monday took me on a tour of Suffolk, chiefly the Ipswich area, which did not yield much in spite of fine weather. *Anticlea berberata* was once more well out near Bury St. Edmunds.

Returning south again, I visited Netley Heath on May 30, finding *Epione advenaria* in very good numbers among the bilberry, as well as many *Boarmia consonaria*.

On June 2 a third trip to the New Forest provided a very good bag near Lyndhurst, consisting of nearly all the commoner Prominents as well as *Cochlidia limacodes* and an assortment of Geometers, mainly *Cidaria truncata*, *Ephyra linearia*, *E. punctaria*, *Tephrosia luridata*, and *Numeria pulveraria*. On the 4th I went again to Vert Wood, Sussex, where there was another good haul at light, some 30 species, including most of those I had seen in the

New Forest with the addition of *Lithosia sororcula*, *Hydriomena impluviata*, *Cidaria corylata* and *Semiothisa liturata*. During this part of the month I made three journeys to a spot on the downs near Clandon, Surrey, where on each occasion I found *Dianthoecia conspersa* very common on posts together with a sprinkling of *Mamestra genistae*. Both *Anaitis plagiata* and *A. efformata* were flying on the same ground. On June 6 I continued my journey from this locality to Tilgate Forest, where I had a very busy night till a late hour. At dusk the bracken was buzzing with *Erastria venustula*. Some 40 species came to light, in particular *Notodonta ziczac*, *Lophopteryx palpina*, some fine *Palimpsestis fluctuosa*, *Demas coryli*, *Hylophila prasinana*, *Dasychira pudibunda*, and among the geometers many *Cidaria corylata*, *Semiothisa notata* and *Bapta temerata*.

On June 10 I paid another visit to the Hampshire haunts of *Acosmetia caliginosa* which was to be flushed from its food-plant in fair numbers, but as in the previous season, both sexes were mostly worn. En route I had halted at Chobham Common where *Nemoria viridata* and *Anarta myrtilli* were flying locally. That evening I made my way back via Pamber Forest, where I had some very good collecting after dark. At dusk the rides were dancing with *Hepialus fusconebrulosa* (velleda), while *Lithosia mesomella* was flitting about the heather patches. Both sugar and light were very attractive. At the former there were some *Mamestra thalassina* and *Hadena prasina*. The lamp kept me busy till 1 a.m. with *Notodonta trepida*, *Drymonia trimacula*, *Lithosia sororcula*, *Acidalia subsericeata*, *Eupithoecia plumbeolata* and *Boarmia consortaria*.

On another trip to Netley Heath at night, on June 14, I took several *Hypena fontis* and *Tephrosia luridata*. On the 16th I went again to Wicken Fen, which was much more productive this time. At dusk I netted *Bankia argentula* and a female *Macrogaster castaneae*, males of which came freely to light together with *Meliana flammea* and a single *Pergesa elpenor*. There was much more, however, to be had at sugar, including *Palimpsestis octogesima*, several *Hama adusta*, *H. sordida*, *Mamestra pisi*, *M. thalassina*, *Apamea unanimis*, and a host of *Miana strigilis* and *M. latruncula*. On the 18th I travelled to Swanage. That night there was a good attendance both at light and sugar on Studland Heath. On sugared aspens soon after dark were *P. octogesima*, *Acronycta megacephala*, *Aplecta nebulosa*, *Caradrina morpheus*, etc., while at the lamps we saw *Bombyx rubi* females, *Earias chlorana*, *Lobophora sexalisata*, *Ephyra orbicularia*, *Semiothisa alternata* and *Teprosia lichenaria*. Back at Swanage there was a remarkable flight of *Cucullia umbratica* at Mr. Russell's light-trap. The next evening on the way home I tried the New Forest with very little success.

On June 24 I motored once more to Gloucestershire and accompanied Mr. T. Bainbrigge Fletcher that night to Symond's Yat, but owing to mist there was not much about except for a few *Abraxas sylvata* and *Boarmia repandata*. The following morning I set out with Mr. Austin Richardson and his wife for North Wales. We reached Arenig, near Bala, in the early afternoon and found *Coenonympha tullia* just out, but not very plentiful. On the way back that evening we called on Mr. Prince, who lives near there and gave us a lot of useful information about the local Lepidoptera. We returned home at a late hour after a 300-mile journey.

In company with Mr. A. G. B. Russell I paid my seventh trip of the season to the Ashford (Kent) woods on the 28th, but we were not so fortunate as on my previous visit on the 21st (*vide Entom.*, 73: 65). However, we saw a number of *Boarmia roboraria*, *Noctua brunnea*, also *Cochlidia limacodes* and *Herminia derivalis*. On July 1 I travelled to the Midlands and the next night had the phenomenal catch in Woodwalton Fen as already reported in reference above. On the 3rd I went over to Fleam Dyke where fresh *Toxocampa pastinum*, *Xanthorhoe rivata* and *Anticlea rubidata* were disturbed from the herbage.

On July 8 I set out on a tour to the south-west. My first halt was at Swanage that evening, when in company with the Russells one of the local woods was our objective, but our only captures of interest were a good many *Lygris prunata* at dusk and *Palimpestis duplaris* at the lamps. The next morning, in spite of fine weather, there appeared to be a very marked scarcity of butterflies, particularly of *Plebejus argus*, usually so common in the cliff valleys. Searching of stems of the *Umbelliferae*, yielded a few young larvae of *Dasypolia templi*. Later that day on the heathland I came across a pair of *Hyloicus pinastri*. At night we went over to Portland, but here again it was disappointing except for two or three *Acidalia degeneraria* and *Agrotis lunigera*. On the 10th Mr. Anthony Russell and I started at an early hour for the Isle of Wight. After almost missing the boat at Lymington, we reached Freshwater in the middle of the day and managed to persuade the local fishermen to take us out in a motor-boat and deposit us on a small piece of shingle under the cliff at Tennyson's Down, along the foot of which we clambered about over rocks for several hours, often in the most perilous situations. A thorough search of several grassy patches failed to reveal any *Acidalia humiliata*, since the best slope had been overwhelmed by a landslide. Owing to the increasing roughness of the sea our friends came out to rescue us earlier than intended, which was just as well, as it was even then only just possible to get on board, and we were much relieved when we landed again at Freshwater. Returning the same evening

to the mainland we collected in the New Forest, near Lyndhurst. Among our captures were *P. duplaris*, *Boarmia abietaria*, *B. roboraria*, *B. repandata* and *Mesoleuca albicillata*. At a late hour we motored back to Swanage. The next day I continued my journey to South Devon, putting up near Ashburton and then proceeding to the coast, where both sugar and light were very poor. On the edge of Dartmoor, on the 12th, *Argynnis cydippe* and *Eumenis semele* were flying everywhere over the heather.

In the afternoon I travelled on via Princetown and Launceston to North Cornwall, which I had not been to for six years, but *Maculinea arion*, which I had seen fairly commonly each season from 1929 till 1933, was not forthcoming on this occasion, possibly due to bad weather, whereas the fine local forms of *Argynnis aglaja* and *Eumenis semele* were as numerous as ever. Night work along the cliffs was very unproductive, nothing of interest turning up. After a stay of two days I moved on, on July 14, via Barnstaple and Taunton to the Mendips, where I had some very good collecting (*vide Entom.*, 72 : 267). Proceeding on the 15th via Wells and Shaftesbury to the New Forest, I reached Chichester in time to visit the sandhills near West Wittering. Though not much came to the sugar patches, the marram heads were well patronized, chiefly by *Leucania littoralis* and *Hama abjecta*, of which there were some very fine examples, including the variegated form. The following morning, before returning home, I surveyed several wooded areas in Sussex and Hants, but butterflies were everywhere less plentiful than usual. Small aspens, however, were abounding with young larvae of *Palimpsestis or*, together with a few of *Cerura bifida*. On July 19 I made an evening trip to some woods near Watford, where I saw melanic *P. duplaris*. On the 20th I went to Folkestone for the night and had a somewhat uneasy time climbing down to the Warren along a very precipitous cliff path which had fallen away in places. On the way I secured several of the fine local form of *Hama furva* at rest on posts, together with some *Gnophos obscurata* at dusk, but little else was forthcoming. The week-end of July 22 took me to the Midlands, where I discovered a new locality for *Tapinostola hellmanni*. A week later, on the 29th, I motored to the South Downs, where *Lysandra coridon* was in abundance, as well as *Argynnis aglaja*. On the way home *Orthosia suspecta* and fresh *Leucania turca* came to sugar near Havant.

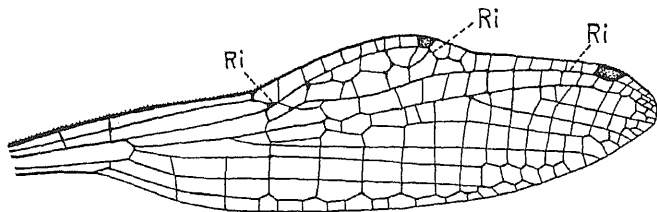
The following day I set out for Scotland (*vide Entom.*, 73 : 34). The outbreak of hostilities soon after my return curtailed all night activities, which was all the more disappointing owing to the exceptionally warm weather throughout September, which was notable for the remarkable abundance of the Vanessids, in particular *Vanessa cardui*, *Aglais urticae* and *Polygonia c-album*.

Except for a fine and profitable spell in the late summer, 1939 was on the whole a lean season, especially for the butterflies. Its most noteworthy feature was the capture of a large number of *Oria musculosa* which, like *Leucania l-album*, is definitely indigenous in an area from which a few were reported many years previously.

Milton Park,
Egham ;
February, 1940.

NOTES AND OBSERVATIONS.

TERATOLOGICAL WING OF *PLATYCNEMIS PENNIPES* PALLAS.—One of the most remarkable instances of teratology in venation has been brought to my notice and is shown in the accompanying text-figure, which depicts the right fore wing of the common *Platynemesis pennipes* Pallas, a well-known British dragonfly. A teratoma consisting of the



Right forewing of *Platynemesis pennipes*. From photo by E. Schmidt.

costal and apical portion of another wing has been grafted on to a normal wing. The graft is located at the subnodus and is formed by an interruption of the costa and a bifurcation of the main nervure *Ri*. A rudimentary pterostigma has been developed in the middle of the costa and is in addition to a normal pterostigma situated at the usual apical site. Another interesting feature in this wing is the far distal position of the arculus, which, in the other three wings, is situated normally, in line with the distal primary antenodal nervure; such a position is a reversion to an archaic condition. I am indebted to Dr. Erich Schmidt for the photograph of this insect.—F. C. FRASER; Bournemouth.

POECILOPSIS LAPPONARIA BOISD. IN BRITAIN.—In the obituary notice of the late W. M. Christy (*ante*, p. 24) Mr. Edelsten alludes to the "rediscovery" of this species by Christy. The history of its occurrence in Britain, so far as at present known, is a remarkable one, for though large portions of practically every county in the Scotch Highlands appear suitable as habitats, it has so far only been detected in limited areas in two, and these not adjoining counties.* The first example, as is well known, was found on the south side of Loch

* Since this was written Professor Harrison (*Ent. Rec.*, 52: 35) has recorded that his son has captured *lapponaria* in Inverness-shire, which makes the third Scotch county.—W. G. S.

Rannoch, in Perthshire. There is a wire fence with wooden posts in front of Dall House, which is situated near the east end of the famous Rannoch Blackwood. On April 4, 1871, a collector, T. Warrington, was walking on the road alongside this fence, and having occasion to lean up against one of the posts, knocked off the first British example of *lapponaria*. It is said that Warrington was carrying with him on this occasion more whisky than is consonant with sobriety, but he was sufficiently sober to successfully get the moth undamaged into a pill-box, and to convey it home. The moth passed through various vicissitudes until it figured in the sale catalogue of the late Clarence E. Fry's collection, which was sold at Stevens's on March 9, 1896. The entry in the catalogue was as follows: "lot 92: *N. lapponaria* taken at Loch Rannoch by T. Warrington, April 4th, 1871. This specimen passed into [H. Roper] Curzon's collection. On the sale of that collection it was bought by E. G. Meek and sold to Dr. Harper; rebought by Meek and resold to Dr. Harper for his second collection. After the death of Dr. Harper his collection was sold at Stevens's, March, 1884. The specimen realized £14. It has been in this collection since that date." It is interesting to note that this price is the highest realized for a British lepidopteron, as a rarity and not a variety, with one exception, when an example of *Minucia lunaris* realized the same figure in 1938. At Fry's sale, Christy having bred and distributed numerous examples, it only realized 45s., the purchaser being the late N. Charles Rothschild, who presented it to the British Museum, where it now is.

Christy first took *lapponaria* as a larva in 1894 and bred a number of specimens the following year. Dr. E. A. Cockayne records (1904, *Entom.*, 37: 149) that in the previous year he had taken specimens in the Rannoch district, I presume in a locality some 20 miles from the spot where the original specimen occurred, and where numerous collectors have since taken the moth in considerable numbers. One of the difficulties in regard to the original specimen is the locality in which it was found; there is no reason to doubt the bona fides of the captor, but the locality is an entirely unsuitable one for the moth to be found in. It is now known that *lapponaria* frequents boggy moors and that its usual food-plants are *Erica* and *Myrica*, but the surroundings of the Dall fence seem most unsuitable, for it is the boundary of a grass meadow. Moreover the whole neighbourhood of Loch Rannoch has been collected, in numerous instances for whole seasons, by great numbers of both amateur and professional collectors, yet so far as I am aware no one has succeeded in turning up another specimen there. It seems probable that it was conveyed accidentally, either as a larva or an imago, from the locality discovered by Dr. Cockayne; there is a considerable traffic between the two.—W. G. SHELDON; January, 1940.

VANESSA ATALANTA HIBERNATING.—On January 12, 1940, near Buckland-in-the-Moor Church, Ashburton, S. Devonshire, a much worn male was found alive lying on the ground, and had apparently been hibernating in a wood-stack on the fringe of the moor. The

weather had been very cold and was freezing that day but sunny, with some snow on the ground.—AMERY ADAMS; "Highgrove," Ashburton, Devon, January 25, 1940.

DEILEPHILA EUPHORBIAE IN KENT.—In reference to the Spurge Hawk Moth larva which I found at Woldingham, Surrey, as recorded in the November issue of this magazine (*Entom.*, 72 : 260), it is with many regrets that I have to state that I was unable to bring this through, and that this larva died on October 10 from what appeared to be a stoppage of the internal organs.—ALAN G. CAMBER; 75, Whyteleafe Hill, Whyteleafe, Surrey.

A NOTE ON *GRAPHIPHORA AUGUR* FAB.—On July 4, 1939, I took a female of this species at sugar, and during the nights of July 10 and 11 (she having been fed on loaf sugar moistened with a few drops of Amontillado sherry) she laid batches of 80 and 42 ova respectively, on the undersides of dandelion leaves. On July 13 she died about dusk, and the eggs hatched in the mornings of July 19 and 20. About 50 larvae of the first batch were kept. The young larvae were at first reared on dandelion leaves, in glazed tins in a temperature of 65° F. by day and 60° F. by night. On August 10, having moulted twice and being then about 12 mm. long, they were put in a larva cage out of doors and given dock (*Rumex obtusifolius* L.), to which they took at once. The cage was under the eaves of a barn, facing west. They grew steadily, eating voraciously each night, and on September 14, chancing to raise the moss which covered the pupating trough, I saw that two of them had pupated on the top of the soil, without making any cocoon. Towards the end of September nearly all of them were full-fed, fewer appearing to feed each evening until October 2, when only one, little more than half-grown, appeared at the evening meal. On October 17 I emptied the pupating trough, with the following result: Under the moss were (i) the half-grown larva above mentioned, (ii) the two pupae I had already seen. An inch and a half deep in the soil (which was the usual pupating compost of loam, silver sand and cocoanut fibre, pressed rather firmly) were 41 cocoons—not "brittle chambers close to the surface of the earth" as Barrett states (*Lepid. Brit. Is.*, 4 : 37), but flimsy cocoons of closely woven silk covered with soil. I opened all these cocoons. One contained a dead larva; 4 contained full-fed larvae (one dark, i.e. about to pupate, three the normal colour); and 36 contained pupae. The usual text-books assert that this species passes the winter in the larval state, the larva feeding up in the spring and pupating in May. The only record of an autumn brood that I can find is in the *Entomologist* for 1883 (17 : 64) by C. S. Boutell. Apparently it is a rare proceeding with this species. On October 17 the 36 pupae were put in an unheated room and on October 29 the first imago appeared at 10.30 p.m. Wind due E., temperature in the room 46° F., out of doors 36° F. My diary describes the weather during the previous week as "bitter cold, with gales and rain from the N." The moths continued to emerge until November 26, 36 in all. Of the four full-fed larvae

found in cocoons on October 17 only the dark one and one other pupated; the other two died. These two pupae are still (January 31) alive. On November 10 a male and a female (which emerged between 9 and 10 p.m. the previous night) paired at 9.0 p.m., and on the nights of November 13 and 14 the female laid batches of c. 120 and 90 ova respectively, on the undersides of dandelion leaves. As I did not require more ova I killed and set her. These ova hatched on December 3. They have been fed on dock (*R. obtusifolius* L.), and at the time of writing (January 31) are in their third stadium. They feed whenever the temperature is above 38° F. These autumn imagines are easily distinguished from the normal summer brood, being appreciably darker. One would have expected them to be smaller than the June moths—Standfuss showed many years ago (*Entom.*, 28 : 73) that shortening of the period of development results in reduction of size of the imago—but this is not so, the average expanse of the males being 40 mm. and of the females 42 mm.—P. B. M. ALLAN; 4, Wind Hill, Bishop's Stortford.

A SKIPPER VISITING ARTIFICIAL FLOWERS.—On February 6 we were having early morning tea at 6.45 a.m. when a Hesperiid—*Burara* (*Ismene*) *etelka* Hew.—flew into the room through a door leading on to a verandah, and after circling round for a short time alighted on some artificial flowers on the table. Fully five minutes were then spent by the insect in probing each flower with its proboscis. It also seemed to imagine that the flowers were a suitable site for oviposition, for it repeatedly curved its abdomen under the rim of petals. The artificial flowers are made of shell or some kind of stone and are stained pink. To represent stamens there are wires covered with green paper and with small yellow beads attached. These flowers are common objects in Chinese curio shops. At the time when this occurred the sun was not above the hills.—N. C. E. MILLER; Department of Agriculture, Kuala Lumpur, F.M.S.

PROCUS (= MIANA) VERSICOLOR IN KENT.—The article on *P. versicolor* in the March *Entomologist* reminded me that I had standing in my series of *P. strigilis* two specimens with rosy ground-colour and large yellow stigmata. Mr. Tams has kindly made certain from the genitalia that these are *P. versicolor*. They were taken at sugar on June 14, 1908, at Westwell, near Ashford, Kent.—G. H. HEATH; 3, Bolney Court, Surbiton.

EUROIS OCCULTA IN WESTMORLAND.—As I understand from Dr. Lowther that *Eurois occulta* is of comparatively rare occurrence in Westmorland, I think it would be of interest to record a male specimen, taken on sugar at Witherslack on August 10. Though not in absolutely first-class condition, the insect was of a distinctly lighter form than a number forced from Rannoch ova during November, 1938.—AUSTIN RICHARDSON; Beaudesert Park, Minchinhampton, Glos, January, 1940.

PANCALIA LATREILLELLA IN INVERNESS-SHIRE.—In June last I came across a large number of a rather dull-looking *Pancalia* in what seemed to me to be an unusual locality and situation. They were on smooth rabbit-cropped turf leading up a slope to birch woodland in Strathglass, Inverness-shire, and were in great profusion—it was difficult to take less than two with a sweep of the net. They seemed to be confined to a patch 150 yds. long by 50 broad, and were settling indiscriminately on grass or such flowers as there were. They were kindly identified for me by Mr. Stringer, and proved to be *Pancalia latreillella*, of which little was known until a long series was taken at Aviemore by Banks in 1909.—C. MACKWORTH PRAED; 51, Onslow Gardens, S.W. 7.

PHALONIA CILIELLA HB. AND ITS FOOD-PLANT IN EAST TYRONE.—This species was first met with on a rough boggy slope near Lough Fea at 800 ft. covered with heather and *vaccinium* and here and there odd plants of *Pedicularis sylvatica*. Last year (1939) it occurred in abundance during May in a marshy meadow flying on sunny evenings over patches of the Lousewort *Pedicularis*, which I am almost certain is its food-plant in this district, especially as the allied *Phalonia walsinghamana* Pierce (*geyeriana* Barr.) is known to feed on *Pedicularis palustris*. The cowslip *Primula veris* is almost unknown in the county.—THOMAS GREER; Sandholes, Dungannon, March 11, 1940.

PIERIS NAPI FLYING IN THE DUSK ON THE ISLE OF COLL.—Early in June, 1939, Mr. R. B. Cooke and I were exploring Loch Clid and, failing to realize that the loch was of much greater extent than we imagined, were caught by the advancing darkness. We therefore struck directly across the open moorland for the Arnabost path in order to avoid the more treacherous ground. As we proceeded we kept observing white butterflies still flying. In spite of the need for haste I delayed to capture specimens, and was surprised to find that they were all *Pieris napi*. In case anyone should wish to list these as immigrants, let me hasten to say that the species had been captured quite freely on the same ground for several days previously, and also when our parties had been on the island in former years. Similarly, the second brood was common enough in the same habitats, attached to local colonies of *Cardamine pratensis*, in August, 1939.—J. W. HESLOP HARRISON; King's College, University of Durham.

BREEDING BUTTERFLIES TO LIBERATE IN GARDENS.—Leaving out of any discussion for the moment Mr. C. I. Paton's objection (*Entom.*, 73: 27) to liberating bred specimens of butterflies, and dealing with the question of species turning up in fresh habitats, I think he need hardly be surprised to hear of *Limnitis camilla* L. being seen in Sutton, Surrey, since for some years it has been well established within eight miles of his home. I receive reports each year from many members of the London Natural History Society and other friends which are summarized for the *London Naturalist*, and the species has been recorded from all four home counties within easy reach of built-up London suburbs. It has been noted in South Hampstead, and in 1935 Mr. L. J. Tremayne watched one outside Grand Hotel

Buildings, Trafalgar Square, W.C. 2, and saw it settle on the plum-coloured uniform of a commissionaire. The species has spread round the south of London to many fresh haunts, but the last three summers have seen reduced numbers reported from various places. One entomologist who also shoots pheasants says that these birds are destructive to the larvae and pupae in the woods, and he thinks that the increase in shooting syndicates tends to be harmful to *L. camilla*. *Argyminis aglaja* L. is on the Surrey Hills not far from Sutton and as a strong flier can easily wander into the town. *Polygonia c-album* L. has spread all round London, apparently moving eastwards through Surrey to Kent and then northwards into Essex and Herts. It is plentiful in various places, and a few years ago I saw forty together at a spot not far from Sutton. Mr. K. P. Keywood reports one seen in the City on July 5 last year, while on August 28, 1933, I walked along Old Broad Street and Threadneedle Street behind one which was last seen flying near the Mansion House when I lost sight of it. All these three species are quite capable of wandering for miles. What are man's artificial county boundaries to them?—H. J. BURKILL; 3, Newman's Court, Cornhill, E.C. 3.

RECENT LITERATURE.

The Louse. By P. A. Buxton. London: Edward Arnold & Co., 1939. x + 116 pages, 28 diagrams. 7s. 6d.

Each war has its characteristic diseases, and at least one of them usually flares into special prominence. Enteric fever during the Boer War and trench fever in Flanders during the last Great War are examples. But whatever varies in war, one thing has hitherto seemed constant—the louse. True, it is always with us in civil life, and more than is commonly suspected, but the relapse to the social conditions of barbarism that occurs in military campaigning brings about the heyday of the pest. Those who have suffered the misery of protracted lousiness know full well that the louse should be fought simply because it is a louse. Despite this and the well-known facts that typhus is louse-borne, and that its menace was always uncomfortably near our troops in Flanders during 1914–1918, the traditional fatalistic attitude that lice and war are inseparable prevailed sufficiently to prevent the institution of an anti-louse campaign on the scale demanded by the circumstances on the western front. The major problem of such a campaign lies in arranging that disinfection is available sufficiently often for those troops, notably the infantrymen, whose living conditions give the louse its chance; and, in Flanders, a problem it remained. Risks were taken and it is a miracle that the forces escaped typhus. However, a deputy emerged in its non-fatal louse-borne relative, trench fever. It caused enormous wastage of man-power, for those infected may be incapacitated for periods as long as six weeks. Then, in December, 1917, the discovery was made that trench fever also was louse-borne, whereupon the

fatalistic attitude received the shock it long deserved, and an anti-louse campaign of a more fitting nature was initiated. But the effort came too late; it was largely destroyed by the enemy's last great attack, with the result that at the end of the campaign lousiness was as bad as it had ever been.

Presumably the lesson has been learnt, and this present war, already remarkable in many ways, may go into history as remarkable because soldiers were kept louse-free. Certainly it should not be for lack of research. Whereas prior to the last war practically nothing was known about the body-louse, to-day a great deal is known; there are available also the valuable results of disinfestation research and of experience acquired during and since the last war; and now appears this excellent book, by Prof. P. A. Buxton, of the London School of Tropical Medicine, which presents all the essentials from the work of British, European, American and other authorities, including the author himself.

Of the book's six chapters the first deals with the systematics and general biology of sucking lice (Anoplura); the next four with the human louse, *Pediculus humanus* (comprising the two races *corporis* and *capitis*), in its anatomy, biology, medical importance and control; and the last with the crab louse, *Phthirus pubis*. A most useful appendix describes methods of rearing as well as the curious technique of feeding and infecting lice by rectal injections of human blood. The list of references is very comprehensive. Of special value are the sections on organisms such as spirochaetes and rickettsias.

A few points deserve the attention of the author in the likely event of a later edition. While he is careful to state that the description and interpretation of the louse mouth-parts are matters on which authorities are not unanimous, the author's account is incomplete in certain details. The large paired structures which I once descriptively called "the pumping-pharyngeal tube" and the "sac tube," and which lie anteriorly in the food canal, are shown in Fig. 8, but are not referred to in the key or the text. In view of their size and position they appear to be important and worth consideration, the first as the possible route for the indrawn blood and the second as the guide for the stylets. Again, an earlier and alternative interpretation of the development and homologies of the mouth-parts, by Fernando (*Q.J.M.S.*, 76 (2), 1933), is not presented, while the work of the authority quoted, Schölzel, is not cited in the bibliography. Regarding hatching, it is stated that the larva in the egg swallows amniotic fluid and, later, air, which causes the insect to swell so that it is brought into such firm contact with the shell that the egg cap is forced up. However, Sikora's observations, confirmed by Nuttall, led these workers to describe the process as follows: the air expelled from the larva's anus accumulates behind and the larva is pushed against the operculum; the pressure of the air-cushion finally overcomes the resistance of the operculum and the latter springs open.

Mention is made (p. 68) that experimental transmission of trench fever was obtained by scratching the skin of volunteers and rubbing in the faeces of infected lice. It is worth noting, however, that the work

of the American Red Cross Trench Fever Commission showed also that the disease was caused when lice were allowed to live for continuous periods in a calico cell on the arm. The conditions were such as to render it highly probable that the infection was implanted by the insect's stylets when they pricked the skin fouled by infective faeces or/and when they themselves were contaminated.

In dealing with the epidemiology of trench fever during the war of 1914-1918, the author (p. 68) states that the disease was not difficult to diagnose. It is doubtful whether many will agree with this. Certainly when the whole clinical picture is known a diagnosis is possible, but even in hospitals during the last war, very few medical officers, if any, would venture to diagnose a patient in the early stages of a fever as being a trench-fever case. We all remember the free use of the cryptic letters P.U.O. (pyrexia of uncertain origin).

But all these are relatively minor criticisms of a compact, authoritative work which should form part of the reference equipment of every entomological, bacteriological and public health department, and go into the kit—it will even fit the pocket—of all medical and sanitation officers in the services.

A. D. PEACOCK.

The Moths of the British Isles. By RICHARD SOUTH. New (3rd) edition, revised by H. M. EDELSTEN. London: F. Warne & Co., 1940.

A first glance at these volumes, which were first published in 1907 and 1908, shows that the revision exercised by Mr. Edelsten has been one of detail and of nomenclature. This is a high compliment to the work of the original author; on the other hand, because the text has been printed from plates, the reviser has been forced to place in the appendix most of the new matter, to make only small verbal alterations in the text, and has been unable to re-group the species in accordance with modern generic conceptions, i.e. he has been subject to a technical printing restraint which has rendered impossible any major modifications of arrangement. The amount of detail alteration in the text is, however, not inconsiderable, though confined naturally in the main to minor corrections, for South made few mistakes; only a close comparison of the texts of the two editions will reveal this, and will also show that it has been necessitated mostly by the new facts which have come to light since South revised his work for the second edition in 1923. Occasional omissions, such as the unaccountable absence of a description of the larva of *Amathes triangulum* (p. 223), have been made good in the appendix. To readers familiar with the earlier editions and their numerous reprints, the most startling thing will undoubtedly be the numerous and long overdue changes in nomenclature. The Geometridae have been brought into line with the standard work of Mr. Prout in Seitz's *Macrolepidoptera of the World* and elsewhere; these are already familiar to most lepidopterists, and will not cause so much surprise as many of the changes made elsewhere, notably in the Agrotidae (*olim* Noctuidae). In adopting these changes Mr. Edelsten makes generous acknowledgment of the help he has derived from Mr. Tams's

research into the nomenclature and taxonomy of the Heterocera; it is a pity that under the special limitations imposed on him the scattered members of some of the subfamilies of Agrotidae have had to remain asunder, etc. Many old familiar (wrong) names have gone, others have been revived. *Noctua*, for example; this never had any right to be used in entomology, since the name was first used (and has always been used) in ornithology! *Agrotis* replaces it. The results of Mr. Tams's work on nomenclature have already been published in this magazine (March and June, 1939), but a few examples of the consequences may not be out of place. Thus, the True Lover's Knot, *Lycophotia strigula*, becomes *Lycophotia varia* De Vill.; the Pearly Underwing (*Lycophotia saucia*) becomes *Peridroma porphyrea* Schiff.—*porphyrea* seems in the past to have been applied to *L. varia*, *Eumichtis satura* and *Rhyacia simulans*! The familiar generic name *Dianthoecia* has to go, since *D. cucubali* Schiff. is the genotype of *Hadena*, which is the oldest generic name in this association. The same applies to *Xanthia*, the genotype of which is the N. American *X. rufago* Hübner, a species not congeneric with our "Xanthias." On structural grounds *Heliophobus reticulata* is congeneric with *H. albicolon*. *Dischorista fissipuncta* is now *Apamea ypsilon*. Some lepidopterists will no doubt throw up their hands in despair at all this. They are wrong. Let them abjure their false gods, burn their old and out-of-date text-books, get these "new" names into their heads, and be properly ashamed that they have not put their house in order sooner. Above all, let them be sure to use this nomenclature when they send notes for publication in this magazine.

These volumes mark a real advance. Not the least remarkable thing about them is the excellence of the plates, which really seem as fresh to-day as the day they were first used. And the index has been taken thoroughly in hand. N. D. R.

OBITUARY.

G. L. BATES.

Mr. G. L. Bates, the well-known collector and writer on West African birds, passed away at Chelmsford on January 31, at the age of 77. His personal interest was in ornithology, and he published a large number of useful papers on this subject. His vertebrate collections, which included, in addition to birds, many important discoveries in mammals, reptiles, batrachians and fishes, went to the British Museum for selection and description during the period 1896 to 1928. Bates was nevertheless a careful collector of Lepidoptera, and the results of his work in this branch, as well as his duplicate vertebrates, went to Mr. W. F. H. Rosenberg, through whom they were distributed to numerous public and private museums. One of his most striking discoveries among the Lepidoptera was *Charaxes acraeoides* Druce, the type of which is now in the British Museum (Joicey Bequest). This handsome butterfly falls into the mimicry

group of *Acraea egina*, *Papilio ridleyanus*, *Pseudacraea clarki*, etc. A considerable number of Lycaenidae and Hesperidae collected by Bates were described as new by Hamilton H. Druce in *P.Z.S.* 1909-1910, and other papers in various periodicals by Herbert Druce and Bethune-Baker contained descriptions of additional Lycaenidae and some Heterocera. The types of all these have now found their final home in the National Collection. Bates was born in Illinois, and from his earliest days his love of natural history manifested itself. He was able to fulfil his desire to travel and study nature in the tropics in 1895, when his father acceded to his wish to visit West Africa. His earliest specimens were collected in Gabon and French Congo, but subsequently he acquired a plantation in the Southern Cameroon, from which district the majority of his collections came. Most of his specimens bear the locality "Bitye" (also spelt "Bitje"). This place is situated about 30 miles from Zangmalima. The name "Bitye" is the native way of saying "Bates". The plantation was called "Bitye" by natives who in the early days wished to inform people that they were going to, or coming from, Mr. Bates, and the name has stuck to the present day.

In 1921 and again in 1925 Bates made journeys to the more mountainous districts in Northern Cameroon and Nigeria, principally for birds, but finding time to collect many thousands of Lepidoptera, a considerable proportion of which showed strong affinities with the East African forms of the higher altitudes. In 1928 he retired, but the old life still called him, and in 1931 he made an expedition on behalf of the British Museum to French West Africa and the Sahara. As late as 1935 he extended his researches still further afield, making a trip to Arabia, again on behalf of the British Museum. Bates's painstaking work, covering as it did so many years in so varied a range of subjects, is an outstanding contribution to our knowledge of the fauna of West Africa.

N. D. R.

WALTER DANNATT.

Mr. Walter Dannatt, of 96, Guibal Road, Lee, S.E. 2, died on Wednesday, February 21, at the age of 77. His friends will always affectionately remember him as "Pussyfoot" from the peculiar quiet way he used to walk—he was a familiar figure at Stevens's Auction Rooms. But he will best be remembered for his amazing bicycle trips through the jungle in search of rare exotic Lepidoptera. His last expedition to the Amazon was only four years ago, when he took the usual tourist boat "a thousand miles up the Amazon" and then pushed on another 200 miles or so in a native steamer. He loved to tell the story that this latter trip only cost him 17s. return! He was unfortunate, however, as he added practically nothing to his collection as the season was a particularly bad one. On a previous trip to Jamaica he did remarkably well. He was one of the founders of the Gilbert and Sullivan Society and took part in local borough activities, and was at one time a member of the Greenwich Council. He was an assiduous collector, but it is at present not certain what will happen to his extensive collection.

L. HUGH NEWMAN.

THE ENTOMOLOGIST.

Vol. LXXIII.]

MAY, 1940.

[No. 924.]

A NEW ABERRATION OF *EMATURGA ATOMARIA* (L.) (LEP. GEOMETRIDAE) WITH AN ACCOUNT OF ITS GENETICS.

By E. A. COCKAYNE, D.M., F.R.C.P., F.R.E.S., AND
C. N. HAWKINS, F.R.E.S.

Ematurga atomaria ab. *praeclara* nov.

Head, thorax, abdomen, shaft of antenna and legs entirely devoid of brown scales. Wings: The basal and the two median lines of the fore wings and the two median lines of the hind wings clearly defined and deep chocolate brown in colour, submarginal line absent, fringes chequered ground colour and deep brown. The notable features are the absence of brown speckling on the wings and elsewhere and the absence of the submarginal band.

Types.—Male, bred April 11, 1939, Brood "B" (C. N. H.) (Fig. 1 : 2) and female captured June 5, 1937 (C. N. H.) (Fig. 1 : 1).

Paratypes.—11 males and 17 females, bred 1939 (E. A. C. and C. N. H.). Types and paratypes all S. Sussex.

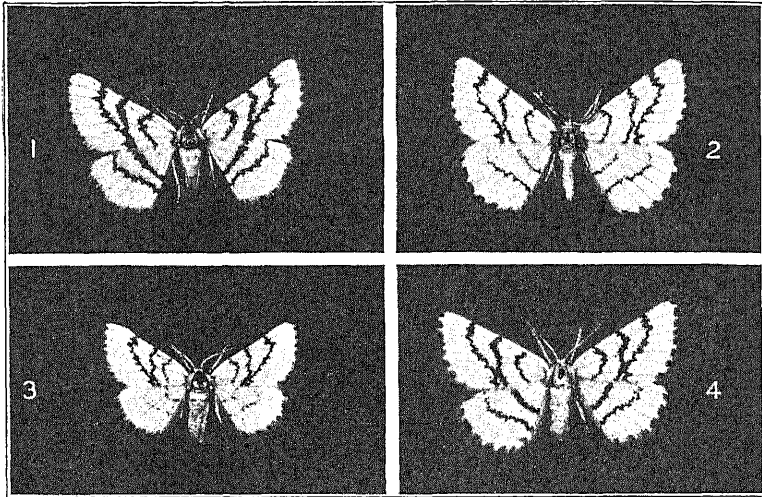
A sub-variety of this aberration has one or both of the median lines on the hind wings faint or almost absent. This sub-variety has been bred (C. N. H.) in both sexes, a male and two females in Brood "A" and two females in Brood "B." One of the Brood "A" females is shown at Fig. 1 : 3.

The exact situation and distance apart of the cross-lines on the wings varies as in the normal speckled form of the species, e.g. the median lines on the fore wings may meet at or near the inner margin or they may be well separated. Similarly, with regard to the ground-colour, that of the head, thorax, abdomen, shaft of antenna and legs may be unicolorous white or ochreous, and that of the wings, in the male, white or pale ochreous with ochreous or deeper ochreous tint along the inner margin and at base of hind wing, or uniformly deep ochreous, while in the female it is pure white or rarely pale ochreous.

Since these two forms of variation, affecting the situation, etc., of the cross-lines, and the ground-colour, are obviously independent of the factors governing the aberration now under discussion, though, owing to the absence of the brown speckling, they are much more conspicuous in it than usual, it seems inappropriate to mention them in the type description of this aberration given above and they are ignored in the consideration of its genetics which follows.

About 1920 three males of this new aberration were taken by a

schoolboy in a small chalk pit in south Sussex, but, though looked for, none was seen the next year. One of us, E. A. C., spent a week-end, May 31 to June 2, 1935, in the neighbourhood, but found the chalk pit was no longer in existence. A careful search of the surrounding district resulted in the discovery of a small colony of *atomaria*, and a male *ab. praeclara* in perfect condition was captured on June 1. The next day was cold and showery with a high wind and no *atomaria* were seen.



W. H. T. Tams photo.

FIG. 1.—*Ematurga atomaria ab. praeclara nov.* (1) Allotype ♀, S. Sussex, 5.vi.37; (2) type ♂ bred 11.iv.39 (Brood "B"); (3) paratype ♀ bred 1939 (Brood "A"); (4) paratype ♀ bred 1939 (Brood "B").

Another week-end, May 30 to June 1, was spent the next year in an attempt to capture a female, but although the weather was fine and sunny, no *atomaria* were seen. The first week of June, 1937, was warm and sunny, and we decided to go to the locality for the day on the understanding that any female taken should be sacrificed for eggs. The day was ideal but *atomaria* was scarce and, as usual in this locality, almost every moth had to be disturbed before it took to flight. After a time one of us, E. A. C., put up a male *praeclara* and about an hour later a second was caught within a few yards of the first, although the ground had been systematically trodden and retrodden. Five hours from the start C. N. H. disturbed and caught a female *praeclara* close to the place where the males had been.

The proportion of *praeclara* in the colony must be relatively

high, for on the first visit only about three dozen male and five female *atomaria* were seen, and on the second about 50 or 60. Another locality some distance away, but closely resembling the first in the character of the vegetation, was visited, but only two *atomaria* were seen and both were normal.

The captured female laid 48 eggs, of which 46 hatched. C. N. H. looked after the larvae and these were fed on white clover, which they seemed to prefer out of various foods offered. Forty larvae went down, but only 21 imagines emerged, 11 males and 10 females. All the F. 1 generation were normal. Six pairings were obtained and the five, from which imagines were bred, gave the following results :

	Normal.		<i>Praeclara</i> .		Dead pupae, form unidentified.	
	♂.	♀.	♂.	♀.	♂.	♀.
Brood "A" (C. N. H.) .	14	15	2	4	11	5
	6*	2*	3*	4*	..	..
	20	17	5	8	11	5
Brood "B" (C. N. H.) .	4	6	2	3	4	1
	3*	1*	..	..	..	..
„ (E. A. C.) .	10	20	5	8	7	1
	..	2*	..	..	..	..
	17	29	7	11	11	2
Brood "C" (C. N. H.) .	1	4	..	1	2	1
Brood "D" (E. A. C.) .	2	..	..	..	..	..
..						
Total	40	50	12	20	24	8

90 Normal ; 32 *praeclara*.

* = Dead pupae containing fully developed imagines identifiable as to form.

Total number F. 2 generation including dead pupae not identifiable as to form, 76 males, 78 females.

The pupae in the hands of E. A. C. were examined on January 1, 1939, and a normal female was found dead and a female *praeclara* just emerged. Emergence was spread over a long period, the last appearing on July 3, so that opportunities of obtaining pairings were few. However, on February 19, a sunny day, a normal male, rather lightly marked and with a whitish ground-colour, and a female *praeclara* emerged. They were put into a glass-topped tin and exposed to sunshine. The male was lively at 11 a.m., but the female was not calling. She began to call at 12 o'clock and the male fluttered round her again and again attempting to pair, but

usually knocked her down. Pairing eventually took place at 3.55, and copulation lasted until some time between 5.30 and 6 p.m. A very large batch of eggs was laid during the night, and the female, the only ochreous one in the brood, was killed as a cabinet specimen in the morning. The eggs darkened and began to hatch on March 16. About a third failed to hatch and all except a dozen of the rest refused to eat clover, although it was gathered from the same plants on which the previous generation had been fed. After a week only nine were left, but these thrived and the last of them pupated on May 15.

On the outbreak of war E. A. C. was sent to Aylesbury and thought it safe to leave the pupae in London, but on November 4 he found that 6 had emerged and died. The remainder emerged December 1, 8 and 17. All the males, both normal and *praeclara*, had a deep ochreous ground-colour, but both females had a white ground.

The chance that the male was heterozygote was 2 : 1, and the hope of breeding *praeclara* again in the F. 3 generation was realized. The brood consisted of 4 normal males, 1 normal female, 3 male *praeclara*, and 1 female *praeclara*, a ratio of 5 normal : 4 *praeclara*, the expectation from the cross DR \times RR being 1 : 1. The F. 1 generation, presumably DD \times RR, gave no *praeclara*, as expected ; the F. 2 generation DR \times DR gave 90 normal : 32 *praeclara*, close to the 3 : 1 ratio expected ; and the F. 3 generation DR \times RR gave a result as near to the expected 1 : 1 ratio as possible.

The result of the breeding experiment proves that *praeclara* is a recessive determined by a single gene.

The pupae of the F. 2 generation in the hands of C. N. H. were carefully watched in the light of E. A. C.'s experience, but it was not until March 15, 1939, that emergence began, when a crippled normal female of Brood "A" appeared. His first *praeclara*, a slightly malformed female of Brood "B," emerged on March 30, and thereafter emergences continued till about the end of May. Four or five attempts were made to obtain pairings between males and females of *praeclara*, but without success ; the sexes rarely showed even a brief interest in each other, and although a certain number of eggs were laid by different females, all proved to be infertile. It made no difference whether the males and females belonged to the same or to different broods. C. N. H. also had no success in obtaining pairings between normal males of the F. 2 generation and *praeclara* females, though this may have been because the females were too old, having first been tried with *praeclara* males.

Our grateful thanks are due to Mr. Tams of the British Museum (Nat. Hist.) for his kindness in taking the necessary photographs.

MORE HEBRIDEAN DAYS. I: THE ISLE OF MULDOANICH
AND THE UIDH PENINSULA OF VATERSAY.

BY J. W. HESLOP HARRISON.

DURING the past season, for the first few weeks of our stay in the Outer Hebrides, we made our headquarters on Barra. This arrangement, although very convenient for most purposes, made it very difficult to work the southernmost of the Barra Isles. We therefore transferred our belongings for ten days to the Isle of Vatersay, lying to the south of Barra, and with that island as a base made many long and interesting expeditions.

Naturally, one of the earliest planned was to Muldoanich, the Isle of the Monks, situated three miles to the east of the "Square," Vatersay, whence we could see it as a forbidding looking mass of rock rising sharply from the sea to a height of 505 ft. Thus, one fine July morning saw us equipped with all our collecting gear, spinning down Vatersay Bay in the fishing boat "Tita." Past the Meall we sped, picturing as we did so the crowds of *Eumenis semele* and *Zygaena filipendulæ*, which we knew would be struggling there with the Blues and Meadow Browns for the knapweed and thistle heads. Once more, too, we saw the gorge which supported the only colony of Roseleaf-cutter bees we had noted in the Hebrides. Finally, after an interesting sail we landed just east of Rudh'a'Mhorbhuile on Muldoanich.

Once ashore our difficulties began, for the island is so precipitous that a slight slip would hurl one into the sea. Of necessity we were driven to skirt the north shore of the island, and soon found that it was much more productive than it looked, as crowds of *Cidaria truncata* of many forms scattered from the various rock faces when we approached them. Here and there the *splendida* form of *Maniola jurtina*, with a sprinkling of smallish *Polyommatus icarus*, afforded variety. As we pressed on, the presence of cocoons of *Zygaena filipendulæ* on the rocks and grass stems warned us to keep a look-out for Burnets. Sure enough, they put in an appearance, buzzing along in the sun, which now seemed to be about to fail us; these were very large examples, nearly twice as big as examples in our possession from the Isle of Berneray in the Sound of Harris.

After a desperate struggle for about a quarter of a mile we could proceed no further, as we struck a deep and ugly ravine which effectually barred our way. On the rock ledges in this gorge was an abundance of the Rose-root (*Sedum roseum*), upon which strange plant *Abraxas grossulariata* was ovipositing. We watched them for a while, and then commenced the stiff climb to the centre of the

island. In our ascent we saw much the same insects as before until the heather became more luxuriant, when we captured firstly odd specimens of *Colostygia pectinataria* (= *Amoebe viridaria*) and then several *Perizoma minorata*—the latter new to our Outer Island lists, although captured previously on Rhum.

Once on the top we found ourselves in a sheltered hollow, too slight to be called a valley, and there we encountered our first *Bombus smithianus* and a few *Argynnis aglaja*. The latter insect, unlike our Pabbay captures, was quite ordinary in form, and patronized the flowers of heaths, thyme and self heal. In this protected nook, too, were taken our first dragonflies, *Libellula quadrimaculata* and *Cordulegaster boltonii*; the latter capture, we believe, provides the first record from the Outer Hebrides, although we have taken it in other stations in the "Long" Island.

As we descended to return to the boat, odd *Ammogrotis lucernea* and *Entephria caesiata* were netted, although, as has been our uniform experience in our various expeditions, the last-named was unexpectedly rare. At this stage, too, we unfolded our beating trays to beat the salnows and junipers, which now became fairly frequent. From the *Salix aurita* little came down except *Acalla hastiana* and *Ematurga atomaria*, but the junipers (*Juniperus sibirica*) produced larvae of *Thera juniperata* and pupae of *T. cognata* mixed with an abundance of the shrimp *Gammarus dubieni*! From the pupae of *cognata* beautiful *griseata* forms were bred.

We now reached the sea at a point south of the site of our landing, and here once more magnificent gorges abounded, on the ledges of which the Red Champion, the rare Pyramidal Bugle (*Ajuga pyramidalis*) and the Sea Champion (*Silene maritima*) swarmed. From the latter larvae of *Hada nana* were obtained by simply lifting the masses of the plant from the rocks over which they sprawled.

The journey to the boat provided us with a repetition of our former captures, except that an isolated lot of nettles yielded larvae of *Simaethis fabriciana*.

Once aboard the "Tita" we set a course a few points east of our destination—the islet Uinessan which juts out to the east of Vatersay. This detour was necessitated by the presence of the grim-looking and dangerous rocks of Sgeirean Fiaclach, Sgeir na Muice and Snuasimul. Without difficulty we got ashore on Uinessan, and tiny as the islet is, were soon at work collecting larvae of *Nyssia zonaria*, which crawled everywhere amongst the ubiquitous Birds'-foot Trefoil, and swung in all directions from grass stems. From Uinessan we easily reached the subsidiary peninsula of Creag Mhor, which stretches eastward from the Uidh area. Here another lot of *Nyssia zonaria* was encountered, and, in fact, wherever dune or

machair appeared, and marram, trefoil and iris grew, that insect was always to the fore.

Tramping across dune, machair, marsh and moorland, we collected as we went. Clearly, much that formed our bag belonged to the same species as those seen on Muldoanich. Still, there were novelties, and one of the most welcome was the *scotica* form of *Argynnis aglaja* which sailed across moor and dune alike. Once again, too, *Eumenis semele* "insolated" itself on the rocks, whilst at intervals darkish *Aglais urticae* visited the thistles. On one cliff our hopes were raised by the appearance of the aspen, but, alas, it supported no tenants; instead, we had to console ourselves by boxing a female *Arctia caja*, of the most ordinary type, which rested on an adjoining ledge. A little further along a small colony of *Colostygia didymata* was sampled, and its members were of a facies warranting serious additional study.

Once more swinging to the dunes we worked the Yellow Rattle which, with the grass it parasitized, formed a dense carpet, and there somewhat ordinary-looking *Perizoma albulata*, and lots of *Euphyia bilineata*, practically all belonging to the race *atlantica*, were disturbed and netted.

Soon after this we were once again forced to the moorland, and almost immediately picked up a few larvae of *Saturnia pavonia* from heather and swallow. However, here we found, what we had never expected, a very promising-looking lochan. If the map of Vatersay is examined, it will be found that a small loch is marked in the south centre of the island, and none in the Uidh district. That shown on the map is quite fraudulent, for it is simply a dried-up duckpond; the other provided us with quite a good selection of insects. Amongst these were the water beetles, *Hydroporus obscurus*, *H. discretus*, *Agabus bipustulatus*, *Colymbetes fuscus*, *Gyrinus natator*, *Philydrus fuscipennis*, and *Laccobius minutus*, the Water bugs, *Notonecta glauca*, *Gerris costae*, *Corixa scotti*, *C. venusta* and *C. punctata*, the dragonflies, *Enallagma cyathigerum* and *Ischnura elegans* and the moth *Hydrocampa nymphaea*.

It was now time to set out homeward, and this, as usual, was the most tiring part of the journey, since we had to skirt the never ending shores of Vatersay Bay. We, of course, beguiled the journey by collecting as we proceeded, but the only novelties which were detected were a really nice batch of *Perizoma blandiata* and a very few plants of restharrow, *Ononis repens*, which provided the second record of the species in the Outer Hebrides, and incidentally seemed to support a colony of *Polyommatus icarus*, for that Blue had retired for the evening to that plant and the marram-heads near by.

King's College,

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UNEXPECTED FINDS.

BY BRIG.-GEN. J. B. G. TULLOCH.

SOME time ago Mr. Riley wrote to me and said that he was often astonished at the varieties that existed in private collections, about which nothing was known until those collections were "put on the market." So here is a brief account of two such which were never put on the market as entomological collections, but only as furniture, and which came into my possession in odd ways, and which I would now like recorded, so that if my own insects are ever disposed of by my heirs, there may be a record of the rare or unusual things amongst them.

The first instance occurred in 1926 when I was stationed at Colchester, and saw a "butterfly cabinet" advertised for sale by a Mr. Bright, of Wenham, Suffolk. When I went to look at the cabinet I found it was quite a good piece of work, apparently locally made, of walnut, and with exceptionally large drawers, which I wanted for large-sized Papilios. I did not bother much about the contents till I got it home and went through the drawers carefully. The contents were "thrown in" with the cabinet! The best things were *Celerio livornica*, a good *Utetheisa pulchella*, a *Catocala fraxini* with its history attached (dating back to 1876), and a *Pyrameis huntera*! The latter had a label on it which read, "The specimen captured near Woking. Vide *E.M.M.*, vol. xiii, p. 230." This reference goes back to March, 1877, and from it one gathers that this butterfly was captured in August, 1871, in a carriage of the old L.&S.W. Railway at Wokingham Station. The reference goes on to say, "Upon comparing the example at the British Museum, it turns out to be the Brazilian form of *huntera*, differing very considerably from the typical N. American insect. My correspondent admits the increased difficulty, but still thinks he has made no mistake. It may be well to remark that the Brazilian Mail Packets come to Southampton, which is on the L.&S.W. Railway." So there we have it! As far back as 1877, before the days of fast "fruit boats," there were entomologists who were of the opinion that butterflies had sufficient sense to cross the Atlantic by even old-time steamers rather than trust themselves to a fortnight's flight across the ocean! Incidentally my *huntera* is identical in form with "*iole*," line a, Plate 94 of Seitz's *Macrolepidoptera*, American Section. It is badly set with an English common white pin.

The second instance occurred this year. There was a sale of furniture at Clyro Court, near Hay, Herefordshire. This very large

country house had been rented by a Mr. Cowans, now dead. A furniture dealer bought at the sale a curious cabinet, which he re-sold to a garage proprietor at Brecon. The agent of the property told me there were butterflies in the cabinet. I got in touch with the garage proprietor, who informed me that he had bought the cabinet because he thought "his wife would like the cabinet, and his boys might like the pretty butterflies in it." But his wife did not like the cabinet, and the boys preferred motor boats to butterflies. The garage owner himself did not know the difference between a cockroach and a butterfly, and, I think, cared less, so I bought the lot from him. The cabinet was a curious thing with 48 smallish drawers and contained two distinct collections, having nothing to do with each other. The one was a British collection made by the late Mr. Cowans, evidently from the labels on the insects between the years 1906-1914, mostly in the Fen district and Surrey and Folkestone. He apparently knew somebody called Loxham, who collected earlier still, and whom I cannot trace. From this British collection I got, amongst other things, *Argynnis lathonia*, *Nymphalis antiopa* (traced back to Dr. Wheeler's collection) and *Cyaniris semiargus* amongst the butterflies, and a minute *Agapetes galathea*, very perfect, but only $1\frac{1}{8}$ in. in diameter. Amongst the moths I found *Celerio euphorbiae*, *C. livornica* and *C. galii*; also *Epiconaptera ilicifolia*, *Drepana harpagula*, *Phragmatoecia castaneae*, *Leucania obsoleta*, *Caenoteaphria sagittata*, *Eustroma reticulata* (bred by Loxham from Windermere larvae), *Apatele strigosa*, and three *Leucodonta bicoloria*!

The other part of this collection consisted of showy exotics, and no wonder the garage man called them "pretty butterflies." In this lot I found *Troides victoriae*, *T. chimaera*, *T. goliath*, and a species new since the Great War, *T. rothschildi*. Also *Papilo dixonii* (Gr.-Sm.). This specimen was labelled *P. kuehni*, crossed out, and *dixonii* substituted, and according to sketches very kindly made for me by Mr. A. G. Gabriel of the British Museum it is *dixonii*, and evidently very rare. Then there was the very scarce female of *Morpho rhetenor* and seven different species of *Agrias*, including *Agrias narcissus*. All these exotics are in perfect condition, generally a male and female, and have evidently come from a dealer, or from some owner of a large collection. If bought from a dealer they must have been purchased by somebody with a good deal of spare cash. Amongst the moths was a good specimen of *Thysania agrippina*. Can any readers of the *Entomologist* throw any light on how these very good exotics got to Clyro Court, Hay? All trace of their history is missing here.

Hill Court,

Abergavenny;

November 5, 1939.

SOME NEW FORMS OF *ODONTOMACHUS* (HYM., FORMICIDAE).

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

Odontomachus nigrifrons n. sp.

♂. Pale testaceous, shining, mandibles except apex of teeth, legs and antennae lighter, head with the "front" black, thorax, node of petiole except apex of spine, a longitudinal patch on post-petiole and a transverse patch on second and third segments of gaster brown, clothed with short and some longer outstanding hairs.

Head narrower, longer, and more narrowed behind than in *tyranicus* Smith, to which species it is allied; narrow margin of posterior border sharper and more pointed at posterior angles, bent forwards in centre to form an angle; *mandibles* with intermediate apical tooth longer than in *tyranicus*, inner margins furnished with 11 somewhat irregular and variable teeth, decreasing in size towards base; *front* longitudinally striate, the striae at the sides not being as long but more numerous than in *tyranicus*; the longitudinal furrow in middle of posterior half of head reaching posterior border. *Thorax* more slender; *pronotum* narrower with striae in middle more slanting, not so transverse and much less distinct than in typical *tyranicus*; *node* with the two blunt teeth on anterior portion more developed, not nearly so abruptly narrowed to base of spine, which is long. *Gaster* with dorsal surface of *post-petiole* much flatter, and less gradually widened from base than in *tyranicus*. *Sting* longer. *Legs* long.

Long. 15.5 mm. Type in B.M. Coll.

Described from six workers taken by Miss L. E. Cheesman, East New Guinea, Humbolt Bay, Hollandia. Sea-level, vi. 36, No. 174. Captured in forest.

Odontomachus tyranicus Smith var. *obsolescens* n. var.

♂. Dirty pale yellow, shining, a dark patch on each side of dorsal surface of mesonotum, eyes black, whole body clothed with some longer, and short outstanding hairs; antennae, except scape and first joint of funiculus, which are shining, dull and pubescent.

Head without eyes about as broad as long, posterior border narrowly margined, posterior angles sharply pointed; *clypeus* convex, anterior border narrowly margined, almost straight; *clypeal foveae* small, round, deep; *mandibles* small, feeble, much reduced, bluntly pointed; *maxillary palpi* 6-jointed, long; *antennae* very long, slender, *scape* short but longer than broad, first joint of *funiculus* slightly transverse, about half as long as scape, the following 11 joints much longer than broad; *eyes* very large, kidney-shaped, prominent; *ocelli* large situated on *vertex* of head. *Thorax* narrowed anteriorly and posteriorly; *pronotum* transverse, narrowed to apex, posterior border semicircular, narrowly margined; *mesonotum* convex with a shallow longitudinal furrow in centre, finely transversely striate; *scutellum* transverse, convex, prominent; *metanotum* narrow trans-

verse; *epinotum* longer than broad, narrowed to base, flat on dorsal surface finely transversely striate at apex, *declivity* very gradual. *Node* of *petiole* rather sharply pointed above but not armed with a spine; *gaster* long, strangulation between *post-petiole* and rest of *gaster* strongly marked, *cerci* present; *pygidium* terminating in a long sharp curved spine. *Stipes* large. *Long.* 9 mm. *Legs* long. *Wings* iridescent; *pterosigma* light brown; *veins* pale yellow; *fore wing* with one *discoidal cell*, two *cubital cells*, and closed *radial cell*.

Described from four males taken by Miss L. E. Cheesman, Papua Kokoda, 1200 ft., v. 33, No. 173. Taken with workers and larvae in nest in roots of *Asplenium nidus*. ♂ type in B.M. Coll.

♀. Smith, in his description of *O. tyrannicus* worker, says the thorax is transversely striate. This is the case in the type and paratypes from Aru, the type locality, the entire thorax being strongly transversely striate. In all the specimens taken by Miss Cheesman in New Guinea and Waigeu the striation is considerably less strong and fails almost altogether on posterior part of pronotum. They are also a little more highly coloured; otherwise they agree very well with the typical form. Type in Coll. B.M.

Described from many workers taken by Miss L. E. Cheesman from Papua, Kokoda, 1200 ft., v. 33, and Waigeu, 2500 ft., iv. 38.

Odontomachus saevissimus Smith v. *linae* n. var.

This variety differs from the typical form chiefly in that the striae on the pronotum are not transverse but circular, being in the centre of disc quite longitudinal. The colour is of a more chestnut red as are the legs and scapes. In the female the striae of the mesothorax are longitudinal. Smith in his description of the female of *saevissimus* (*Proc. Linn. Soc. Lond.*, *Zool.*, 4, Suppl., 102 [1860]) says that the prothorax and metathorax (= *epinotum*) are transversely striate, and in the worker the whole thorax is so striated. Presumably therefore his female had the mesothorax longitudinally striate. For the figure of the female he gives plate i, fig. 9, but he gives the same for *O. nigriceps* ♀!

Type and female type in Coll. B.M.

Described from 13 workers and one dealated female taken by Miss L. E. Cheesman in Dutch New Guinea, Cyclops Mts., Mt. Lina, 3400–4500 ft., iii. 36. Nest in rotten log, and at large in dead leaves.

Odontomachus malignus Smith (*Proc. Linn. Soc. Lond.*, *Zool.*, 3, 144 [1858]), ♀, and *O. tuberculatus* Roger (*Berlin. Ent. Zeitschr.*, 5, 28 [1861], ♀).

Emery (*Gen. Ins.*, 118, 113 [1911]) gives *O. tuberculatus* Roger as a synonym of *O. malignus* Smith, but Mann (*Bull. Mus. Comp.*

Zool., 63, 305 [1919]) points out that whereas Smith described the mesonotum as being transversely striate, in *tuberculata* it is longitudinally so, and treats it as a good subspecies. He further states it is distinct from other species of *Odontomachus* in having the vertex bituberculate. This character however is very marked in the type of Smith's *malignus* from Aru. Smith does not mention this in his very poor description of the latter. The node in both is incrassate, and the spine begins rather abruptly from it—not "tapering into," as Smith describes it. I have compared Smith's type (for the loan of which I have to thank my friend Prof. Carpenter) with Mann's specimens of *tuberculatus* from the British Solomon Isles, which agree very well with Roger's description.

Odontomachus ruficeps Smith subsp. *cephalotes* Smith var. **longitudinalis** n. var.

♀. Blackish brown with a slight purplish hue, shining; mandibles, antennae and legs light brown, funiculi and tarsi lighter. Pubescence short, sparse, decumbent, yellowish. Some longer and shorter out-standing hairs on gaster.

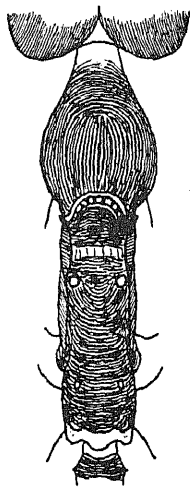


FIG. 1.—Thorax of *Odontomachus ruficeps* Smith subsp. *cephalotes* Smith var. *longitudinalis* Donis. ♀.

Head longer than broad, broadest across eyes, strongly and evenly longitudinally striate, mandibles faintly punctured and longitudinally striate, apical tooth long and pointed, basal tooth broad, shorter and blunt, intermediate tooth shorter than either and sharply pointed; about 12 denticles along base of interior margin; antennal foveae transversely striate, striae less strong than those of rest of head.

Thorax : *pronotum* transversely striate anteriorly, the striae becoming curved and continued longitudinally down sides to base, enclosing a space which is longitudinally striate ; *meso-* and *metanotum* transversely striate ; *epinotum* with striae curved upwards and becoming transverse to base of dorsal surface, *declivity* with striae curved upwards. *Node of petiole* transversely striate, tapering to a fairly long sharp point. *Gaster* finely aciculate striate, the striae transverse on anterior portions of segments, and longitudinal at posterior part.

Long. 11 mm. Type in B.M. Coll.

Described from eight workers taken by Miss L. E. Cheesman at Waigeu Island, Camp Nok, 2500 ft., iv. 1938, in soil under the roots of large trees.

This variety comes nearest to the var. *aciculatus* Smith, in which the pronotum and gaster are transversely striate. I have to thank Mr. A. A. Allen for the drawing.

P.S.—In the *Genera Insectorum* the reference to *Odontomachus tyranicus* Smith var. *nigriceps* Emery is given as in vol. 36 ; it should be vol. 38.

British Museum (Nat. Hist.) ;
Department of Entomology.

VANESSA CARDUI IN APRIL.—On Tuesday, April 2, 1940, I saw a quite fresh *Vanessa cardui* flying in the sun in a sunny little hollow called the Huggetts, near Waldron, East Sussex. There were sunny periods, but the weather was cool.—A. E. MOON, F.R.Met.S. ; The Furnace, Horam, East Sussex, April 7, 1940.

VANESSA CARDUI IN MARCH.—It may prove of interest, at so early a date, and after so severe a winter, to record the appearance to-day of a *V. cardui*. It was an undersized specimen, in good condition, and was flitting about from dandelion to dandelion in my garden, 200 yds. from the sea. It wandered off from time to time, but returned apparently satisfied that there were no other flowers of any attraction in the vicinity.—(Rev.) J. N. MARCON ; Christ Church Vicarage, Seaside, Eastbourne, March 24, 1940.

NYMPHALIS ANTIOPA AT TUNBRIDGE WELLS.—Yesterday morning my friend Mr. Leonard Bellingham caught a female *antiopa* on a railway bank at Tunbridge Wells and brought it over to me in the afternoon. Considering it is a hibernated specimen it is in remarkably good condition. The borders are pure white.—J. LESLIE FULLER ; Copse Bank, Seal, Sevenoaks, Kent, April 1, 1940.

[Mr. L. Hugh Newman has also written that a *N. antiopa* was taken at Tunbridge Wells about this time, and it is clear from a second letter from Mr. Fuller that this is the one to which he refers. Mr. Newman adds that Messrs. Samuel Jones, who use the Camberwell Beauty as their trade mark, have informed him that they have not liberated any this year. It seems that this specimen must have hibernated here, and it would have been of interest to know whether its eggs were fertile.—ED.]

MIGRATION RECORDS, 1940.

BY CAPT. T. DANNREUTHER, R.N.

Winter Records from Co. Cork.—A. W. Stelfox (National Museum of Ireland) sent a letter from J. E. Flynn of Roche's Hotel, Glengarriff, of which the following extracts show conditions similar to those recorded in his letter of March 3, 1937, printed in *Entom.*, 70: 92):

March 2, 1940, Glengarriff.—Feb. 24, a nice sunny day with a light westerly wind, at 11.50 a.m. a *Vanessa cardui* came flying from the west and settled to feed on *Erica*. I looked on and at 12.15 p.m. along came a second and did ditto. A few minutes later I saw a moth coming from the west flying fast about ten feet up and disappearing eastward, thought to be *Plusia gamma*.

After lunch I found that two more *V. cardui* had joined and these I captured. It clouded over and the others disappeared, but on a bush of *Daphne* which is now in flower I spotted the moth again but failed to secure it. Several *Bombus lucorum* and *B. jonellus* were on the wing but no Tortrices though two were seen on Feb. 4. Until to-day there had been a lot of hard east wind and not much sun, but it was sheltered in the garden.

At 12.35 p.m. to-day (March 2) I saw a moth come from the west and captured it as it settled. It was a small pale *Plusia gamma*, confirming my suspicion that the moth seen on Feb. 24 was also *P. gamma*—an exceptionally early date.

Five *V. cardui* came at intervals to the *Erica* (fancy varieties in flower) of which I netted three in case I was counting the same ones twice, so taking both days (Feb. 24 and to-day, Mar. 2) I have seen a certain seven *V. cardui*. The presence of *P. gamma* I think has put paid to my hibernation theory and I am now inclined to believe that they must be early immigrants. . . .

March 3.—To-day was by far the finest yet, cloudless and an east wind varying from light to fresh. At 11.30 a.m. in the garden I released the captive *V. cardui*, except one thought dead taken on Feb. 24. They flew to an *Andromeda* to feed. After a while a few extra ones began to appear and at 1.10 p.m. a *P. gamma* came from the west, paused for a few seconds on *Daphne mezereum* flowers and resumed its flight in a northward direction. At 2.15 p.m. I made a very careful count which resulted in the following—eleven *V. cardui*, one *V. atalanta*, three *Aglais urticae*, several *B. lucorum*, *B. jonellus* and one *B. muscorum*.

At 2.30 p.m. another *P. gamma* arrived from the west and flew off *Erica* fast due east followed a few minutes later by a third going in the same direction. A fourth, which appeared at 4 p.m., was captured "bald-headed" and a fifth passed eastwards without stopping. After to-day I have given up all ideas of hibernation.

March 4, a.m.—Light frost last night, now bright sun, no wind and really warm. I made a count in the garden at 11.45 a.m. 8 *V. cardui*, 1 *V. atalanta*, 1 *A. urticae* and 1 *P. gamma* which flew up

from the foot of a hedge and went off N.E. The *V. cardui* I thought was dead came to life, so I released it this morning.

March 5th, 1940, another *V. cardui* was seen flying west along the south coast near Eyeries, Co. Cork. Those seen at Glengarriff on March 3 between 11 a.m. and 5.30 p.m. were of both sexes and challenging in twos and threes, mostly worn and faded, and did the same next day. One female entered a window and was picked up comatose later.

For comparison, in 1938 after recording a female *V. atalanta* at Glengarriff on March 2, 6, and 7, I saw *V. cardui* females on March 31, two on April 1 and 3 up to 7, and a single male on April 1 and 3.

On April 5 a *V. atalanta* laid eggs on nettle.

In 1939 I recorded two female *V. atalanta* on March 9 and probably the same worn insect on March 11 and 12. (J. E. FLYNN.)

At Timoleague, 35 miles west of Glengarriff, Mrs. G. E. Lucas also recorded single *Plusia gamma* on February 27, 29, March 3, 4, and a *V. cardui* on March 3. Miss K. J. French saw another *V. cardui* at Douglas, Co. Cork, on March 5.

In the Irish column of the Table of Abundance in 1939 (*Entom.*, 73:29), as a female *Acherontia atropos* was found in Northern Ireland on September 12, the species should have been marked "R." On September 24 two moths were taken near Hornsea (Yorks), making nine recorded for 1939.

"Windycroft," Hastings;

March 26, 1940.

NOTES AND OBSERVATIONS.

CALOPHASIA LUNULA, A RARE BRITISH AGROTID.—On August 22 last I took on the South Downs a Noctuid which was quite unlike anything taken before. This proved on subsequent investigation to be *Calophasia lunula*. An excellent figure of this species is given in Seitz's *Palearctic Lepidoptera*, 3: pl. 29. Barrett says of this moth: "Recorded as British by Stephens (*Illust.*, 3: 94), who states that specimens in his own collection and that of the British Museum were captured at Woodside near Epping, Essex, in June, 1817. The insect is correctly figured by Wood on the same authority, but no other case of the occurrence of the species in these islands is on record and there is some cause for doubt whether a mistake was not made in the original statement. Certainly there is no reason to believe it to be now resident there though its absence is somewhat inexplicable." Meyrick says: "Essex, a record in 1817 only, yet likely to occur." The species is double brooded, occurring in May and June and again in August and September. The larva feeds on *Linaria vulgaris*. My specimen is in perfect condition and undoubtedly bred here.—W. RAIT-SMITH; Hurstleigh, Linkfield Lane, Redhill, Surrey.

ORTHOLITHA UMBRIFERA BRED.—On the evening of November 1 last I took in the Forest of Dean area fifteen geometrid larvae unknown to me. I kept them in a glass-topped tin box in my sitting-

room, with a fire by day, and was pleased to note that they continued feeding. About the end of November they began to pupate, so I blew one. All the rest went down, except one which I blew about December 20, as it was evidently determined to hibernate. Between December 21-30 I bred out eleven *Ortholitha umbrifera*, eight males and three females, also a specimen of *Platylabus pedatorius*, which I have given, with one of the larvae, to the British Museum. Mr. J. E. Perkins, who kindly named the parasite, tells me that, though widely spread, it has not yet been recorded from *Ortholitha*.—AUSTIN RICHARDSON; Beaudesert Park, Minchinhampton, Glos.

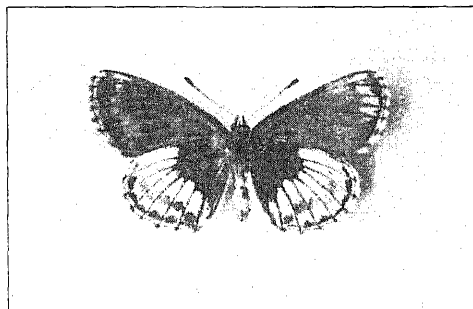
EARLY APPEARANCE OF VANESSA CARDUI.—The occurrence of the Painted Lady (*V. cardui*) in Sussex during the month of March is worthy of record, and I should be glad to know—assuming that these insects were early immigrants—if other examples have been noted elsewhere, or whether there are instances on record of such early appearance in former years. The records were brought to my notice by my friend, Mr. R. Carlyon-Britton, of Chichester. The first example he recorded himself in his own garden at Westgate on or about March 24 (the exact date was not kept), and the second was seen by Dr. A. G. Higgins, of Summersdale, Chichester, on March 31, in the railway cutting at Brandy Hole, Chichester. Both specimens were reported to be in *perfect* condition. Both the Red Admiral and the Painted Lady are classed as “regular migrants which cannot normally maintain themselves in the climate of the British Isles” [*British Migrant Butterflies and Moths*, 1935, published by order of the Trustees of the British Museum (Nat. Hist.)]. Yet there is abundant proof of late years that the Red Admiral can successfully winter in this country. Does not, then, the perfectly fresh condition of these two insects and their early date of appearance rather point to the fact that *cardui* also is entitled to the doubt which so long existed as regards *atalanta* as a possible hibernant in this country? I make this suggestion with reserve, but I would submit that the following remark on *cardui* quoted from the same source as that above referred to is in itself some justification: “The fate of the autumn adults is still uncertain, and observations are particularly needed to see if they return to the south or merely die out without laying eggs.”—STANLEY MORRIS; Ranscombe, Fox Hill, Sturry, Canterbury.

[In this connection the record of *V. cardui* near Ross, Herefordshire, by Miss Armytage (*The Times*, April 4) and the subsequent note of Capt. Dannreuther in the same journal should not be overlooked.—ED.]

VANESSA CARDUI HIBERNATING IN ENGLAND.—*Vanessa cardui* seems to have successfully hibernated in the perfect state in some numbers this winter, despite the severe weather experienced in the earlier part of this year. On March 23 I came across a colony in the Swanage district which I kept under observation for a week. The weather during the period varied from warm S.W. wind with bright sunshine to cold N.E. wind with rain, but even on the cold days the smallest spell of sunshine brought some specimens of both sexes out

to feast on the willow blossom or to sun themselves on the tracks running through the dead bracken. I counted 14 separate specimens on March 23, most of which were incredibly fresh, even to the wing fringes (in certain specimens which I was able to examine closely), and it would seem that the colony had resulted from a late emergence that had gone into hibernation soon afterwards. The term "colony" may seem misapplied, having regard to the powerful flight of this insect, but during the period of my observation I noticed that they rarely flew far afield from the sheltered spot where there was much willow in bloom and also some plants of an early flowering heath in a garden nearby. I heard of one or two other specimens seen in different parts of the same district and no doubt the colony observed will disperse with warmer weather.—A. GRANVILLE WHITE; Hill Top House, Chaldon, Surrey, March 31, 1940.

AN ABERRATION OF *MELITAEA ATHALIA*.—During the summer of 1936 I released a few hundred bred Kentish *M. athalia* in a scrubby wood well up on the Bucks Chilterns, where cow-wheat does not occur but with a fairish growth of the narrow-leaf plantain. In 1937 a small showing of *athalia* resulted. The colony was then strengthened by further batches of bred specimens. In 1938 I was rewarded by the capture, on June 29, of a remarkable female aberration of the butterfly. The upperside is of the accepted var. *eos* form—partly open fore wings and blackish hind wings with an inner row of light spots.

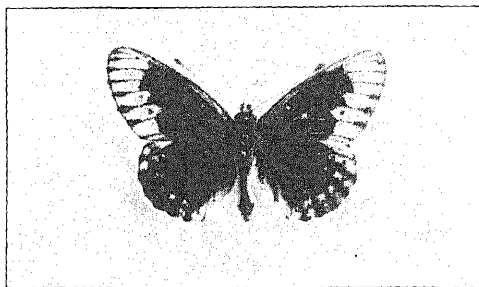


Melitaea athalia ab.

On the underside the hind wings have dark basal patches, as in Frohawk's figure of his Hailsham specimen, but without the broken lighter spotting, being rich brown with black "blobs." The right fore wing has the six black lines between the nervures as in that specimen, smaller basal markings and a thick, black, uneven outer marginal border. The left fore wing is almost unmarked except for a narrower black border. To use familiar terms, one fore wing is "striate" and the other "obsolete."—G. B. OLIVER; High Wycombe.

AN ABERRATION OF *ARGYNNIS EUPHROSYNF*.—The specimen illustrated in the accompanying figure was taken in a wood in Sussex on May 21, 1938. There is little to record about the capture of this

insect save that the species was poorly represented. The impression gained as it flew was of a banded specimen, but it was soon out of sight over the tops of the bushes. Nevertheless there was naturally a thrill at the sight even of a banded *euphrosyne* in so lean a year. It was a good thing that the writer did not know how good it was, for when it appeared 20 minutes later and parked alongside another of its kind, he would almost certainly have missed it through nervousness. On the upperside the inner two-thirds of the fore wings are black, whilst the outer third is a rich fulvous very lightly marked, the outer median row of (5) spots being only slightly represented.



Argynnis euphrosyne ab.

The lunules are obsolete; instead there are broadened black dashes along the marginal ends of the nervures. The hind wings are mainly black, but the ground-colour is shown at the outer angle and by two faint submarginal rows. Underside: The fore wings are heavily blotched with black to a similar extent as the upperside, but the nervures show through more clearly, giving them a less intense black appearance. The hind wings are the most normal part of the insect. The colours, however, are more clearly defined than is usual, and there are a few dark markings which the normal specimen does not possess. The unusual feature of the insect is undoubtedly the upperside fore wings, which combine obsolete markings with coalesced markings. The black and the fulvous provide a contrast which give the insect a handsome and striking appearance.—(Rev.) J. N. MARCON; Christ Church Vicarage, Seaside, Eastbourne.

NYMPHALIS 10 IN NORTH-EAST ENGLAND.—The Peacock was fairly common in these counties a century ago, but became practically extinct about 1860, and although fairly common in 1893, during the next 40 years it could only be described as a very rare visitor. In 1935, however, single specimens were seen at Thirsk, Croft-on-Tees, and Barnard Castle, while in 1937 it was reported from Sunderland and from several places in the Tyne Valley, having crossed the whole of Durham County. Although 1938 was a bad summer for Lepidoptera the fly was found at Sunderland and Corbridge-on-Tyne, and also near Warkworth, some 30 miles north of Newcastle. In the late summer of 1939 the war reduced the number of observers and also

the opportunities for observation, but the Peacock was found at a dozen places, scattered from Teesdale up to Bamburgh, Rothbury and Cateleugh, all very near the Scottish border, so it looks as if the whole area had been reoccupied, if only sparsely.—F. C. GARRETT; South View House, Alnmouth, Northumberland.

A CURIOUS FORM OF *PIERIS BRASSICAE*.—The request in the *Entomologist* for specimens for purposes of research on the nature of pigments of Pieridae tempts me to send a note of an experience I had in 1924. My son, who was in the Orkneys in August, sent me a box of about one hundred full-fed larvae of *Pieris brassicae* which he had collected from cabbages in a garden near Stromness. I was living in Brighton at the time and amused myself by breeding these, of which, I think, eight males emerged with a sulphur yellow band, nearly a sixteenth of an inch wide, from the costa across both wings. I set these, but on removing them from the boards some six weeks later all trace of the yellow band had vanished. However, a doctor friend suggested that submitting them to his X-rays might restore the bands, but the result was negative. These specimens were sold with my collection at Stevens's in 1930. It would be interesting if anyone having the opportunity of obtaining a number of larvae from the same locality would experiment with them.—JOHN E. EASTWOOD; 48, Egerton Crescent, S.W.

AGLAIS URTICAE MUCH EARLIER ON THE ISLE OF COLL THAN ON THE ISLE OF TIREE.—In the last week of May, although the weather gave us a succession of sunny cloudless days, not a single specimen of *Aglais urticae* was noted on Coll; yet, during the same week, hibernated females were captured (and released!) at every point examined, whether on the coast or inland, where nettles grew on Tiree. No larvae, however, were seen. Struck by the curious difference between the two islands, on our return to Coll a very careful watch was kept for the species without result, until a casual inspection of nettles at Sorisdale in the extreme north revealed the presence of batches of larvae more than half grown. Subsequently, at Arinagour and elsewhere, further nests of larvae at the same stage were observed. It will perhaps interest readers to learn that Tiree and South-west Coll have sunshine records in May and early June second to none in the British Islands. Many insects are therefore very early.—J. W. HESLOP HARRISON; King's College, University of Durham.

WASPS FOUND ON THE ISLE OF RHUM.—Although Rhum is quite a large island, wasps are of extremely rare occurrence or rather of very limited distribution there. They are, in fact, only to be found near the few houses which are situated at the head of Loch Scresort. Three species in all were collected, and nests observed; these are, in order of abundance, *Vespa vulgaris*, *V. rufa* and *V. norvegica*. As is usually the case, the nests of the first two were placed in the ground except for one colony which, for some unknown reason, had preferred the eaves of a disused stable. After several attempts had failed, I managed to get specimens from that nest only to find that the species

was *Vespa vulgaris*. Of *V. norvegica* one small nest was pointed out to me hanging in an old dog-kennel.—J. W. HESLOP HARRISON; King's College, University of Durham.

FOOD-PLANTS OF *GONEPTERYX RHAMNI*.—In regard to Mr. Frohawk's note on the food-plants of *G. rhamni*, I found a variegated form of *Rhamnus alaternus* in a friend's garden a few years ago and transferred half-grown larvae of *G. rhamni* to twigs of this shrub, on which they fed readily, and reached a normal maturity.—R. M. PRIDEAUX; Brasted Chart, near Sevenoaks, Kent.

WICKEN FEN FUND.—This fund is raised annually by entomologists and other nature-lovers to assist in defraying the expenses incurred by the custodians of Wicken Fen, the National Trust, in administering the Fen, preserving the fauna and flora, and in providing a watcher. The Fen is unfortunately very inadequately endowed, and its maintenance places a severe strain on the resources of the custodians, who for many years have had to contribute a considerable sum of money annually towards its upkeep. Of late, owing to the lack of funds for cutting, etc., the reed has greatly increased its growth, to the detriment of other plants, and, therefore, the fauna dependent upon them. In consequence of the representations and actions of certain entomologists who are members of the Committee of Management, supported as they have been by the Royal Entomological Society of London, an effort is being made to remedy this by cutting the reed during the summer, thereby weakening its growth, and ultimately eliminating some of it, but of course the extent to which this can be done depends entirely upon the amount of money available. It is earnestly hoped, therefore, that every nature-lover who possibly can will contribute towards this very desirable object, and will send his or her contribution as soon as possible to the Hon. Treasurer, W. G. SHELDON, West Watch, Oxted, Surrey, who will be pleased to send permits for observation or collecting to subscribers on application. The amount subscribed in 1939 was £114 11s. 0d.

LIBERATED BUTTERFLIES.—I am hardly surprised at *Limenitis camilla* turning up in Sutton (see *Entom.*, 73 : 91), as I know that a year or two back it was introduced in at least one locality not many miles away, and, I suspect, in more than one. That is what I am complaining about—the species is not native here and yet it gets recorded. A brother of mine, about forty years ago, found several pupae pinned up to tree-trunks on Ranmore Common. As he was not at that time specially interested in distribution he may not have killed them, and possibly even now descendants may survive. *Argynnis aglaja* used to occur on Banstead Downs, near Sutton, and possibly still does so, but one of the evils of the craze for introducing species to a locality is that one loses confidence in records. They may be genuine, but the observer cannot eliminate the chance of a false record. The practice is most reprehensible, and for a supposed addition to the beauty of the country-side the work of those who study distribution is upset. The beauty of Dame Nature is best

left to that lady herself—she requires no artificial lipstick to add to her charms.—C. I. PATON; 7, Cavendish Road, Sutton, Surrey.

HEPIALID LARVAE WANTED.—Larvae of any of the British Swifts are wanted in connection with work being done at the Parasite Laboratory of the Imperial Institute of Entomology for the Australian Government. Offers should be sent to the Secretary of the Laboratory, Farnham Royal, Slough, Bucks.

NOMOPHILA NOCTUELLA IN BUCKS IN MARCH.—I took a single adult of this Pyralid at Denham, Bucks, on March 24, 1940. It was in perfect condition, which suggests that it was recently emerged, and that it was not an immigrant. On the other hand, it seems unlikely that this insect, generally regarded as a southerner, should have got through our recent severe winter in any stage of its life-history. Dr. C. B. Williams informs me that he has a record of half a dozen being seen at Round Island Lighthouse, Scilly Islands, on March 20, 1935.—(Prof.) P. A. BUXTON; Gerrards Cross, Bucks.

THE DRAGONFLY CORDULEGASTER BOLTONII DON. IN THE HEBRIDES.—As far as I can ascertain this fine insect has not previously been recorded from the Outer group. None the less, we have taken it on three islands, once when my son, Dr. B. Heslop Harrison, was the captor on Mingulay, secondly, when I secured it on Muldoanich, and thirdly, on South Uist in Hellisdale, just north of Beinn Mhor. In the Inner Islands it is far indeed from rare, for we have captured it freely on South Rona, Scalpay, Raasay, Skye, Soay, Rhum, Eigg and Coll.—J. W. HESLOP HARRISON; King's College, University of Durham.

HOUSE-SPARROW ATTACKING ANISOPTERID DRAGONFLY.—On July 25, 1939, while walking along a footpath adjoining the Municipal Gardens at Aldershot (Hants) I saw a cock house-sparrow (*Passer domesticus*) viciously attacking a large, saffron-winged dragonfly of the "hawker" type. The insect, though lively, seemed unable to fly, and could only retreat backwards each time the bird lunged with its beak. On the arrival of several passers-by the bird reluctantly left its prey, which was secured by the writer and was found to be a female Brown Aeshna (*Aeshna grandis*); the right fore wing was practically severed (it came away soon afterwards) and a small portion was missing from the left hind wing. I sent the specimen to Dr. Hobby, Hope Department, University Museum, Oxford, who kindly confirmed my determination. While it is not particularly unusual for birds to attack Odonata (*vide Proc. R. Ent. Soc. London*, 7 : 97 ; 9 : 10, 41 and 42 ; and 10 : 64), this record may be of interest in view of the fact that such attacks are said by Longfield to be seldom successful (*Dragonflies of the British Isles*, p. 24). It is worthy of note that *Ae. grandis* is one of our largest species, measuring up to 3 in. in length. Dr. Hobby has kindly referred me to *Proc. Ent. Soc. Lond.*, 1921, p. 29, concerning a specimen of *Ae. grandis* captured and eaten by sparrows, in which it is stated that "Prof. Poulton had not previously come across any record of the capture by birds of these large and powerful insects."—PETER MICHAEL; Davena, 56, Cranmore Lane, Aldershot, Hants, February 7, 1940.

CLINOCENTRUS GRACILIPES THOMS. IN DUMFRIESSHIRE.—This Braconid is decidedly rare, therefore the capture of five females in this county last year may interest students of our Parasitica. My first example was swept in an old rough lane near Springfield on July 19, and in the same place on August 4 I obtained three more by evening sweeping. The last one came from a mixed wood on Nutberry Moss on August 16. Two of my specimens have been examined by Mr. A. W. Stelfox. Morley gives a good table of our species in this magazine for 1916, p. 127. Lyle (*Entom.*, 1919 : 180) says he has only met with it once. It was not recognized as British when Marshall wrote his monograph in 1885.—JAS. MURRAY ; 6, Burnside Road, Gretna, Dumfriesshire.

A CORRECTION.—There is a serious error in my article in the February issue (*Entom.*, 73 : 25) which I would like to correct. In the table of references on p. 27, the second reference should read : "South (1900) . . . *Entom.*, 33 : 67." And to conform with this, on p. 25, line 2, read : " . . . f. *bivittata* South (1900)," and not " . . . f. *bivittata* South (1909)."—A. J. L. BOWES.

THE HOVER-FLY, ERISTALIS CRYPTARUM FAB. IN BRITAIN.—This beautiful species continues so rare and restricted in its range that it seems well to put an additional capture upon record. Mr. Goffe's undigested paper (*Tr. Ent. Soc. Hants*, 1929, 5 : 90) plainly shows that hardly a score of specimens have been taken during the past century ; and these to be restricted to Hampshire, Dorsetshire and Devonshire, though its continental distribution indicates that it ought to extend thence to Scotland. The specimens that Stephens had "seen in collections" (*Cat.*, 1829, p. 288) were doubtless those one or two taken by John Curtis in South Hants (Verrall), whence I find no mention for sixty-six years. Mr. Fred. C. Adams' MS. relates that his friend Mr. Andrews took "some numbers" flying about a bank and frequenting *Potentilla* flowers at Matley Passage : utterly undated, but presumably *circa* 1895. In 1900 Verrall knew it from Fritham "in recent years" ; Mr. Brameld took one in the New Forest during 1904 ; and Dr. Hunter a male at Ivy near Brockenhurst on May 3, 1921. Singly my friend, Dr. F. H. Haines, quite our best local naturalist, took it on Broomy Heath on June 26, 1924, and in his own garden at Linwood. I experienced the pure joy of netting a small and very bright female of only 9 mm. flying to heather flowers at a shallow gravel-pit on the top of Denny Heath at 2 p.m. true time on July 29, 1927 ; the day was sultry, dull and warm and windless. That summer the pit was prodigal of flowers, abundantly frequented by *Eumecurus*, *Cerceres*, *Saropoda*, *Cryptus diana* Gr., etc., among which the heather stood in bushes three feet high and crowned with purple bloom, the whole capped by fine young Scots pines ; next year the whole was felled, stubbed, and annual military manoeuvres have kept it spoiled ever since that time ; this is *E. cryptarum*'s most easterly record. A final male was taken beside Docken Water, obviously in or near Dr. Haines' garden, on August 15, 1929, by Mr. Goffe. Allowing Mr. Andrews a generous dozen, the above New

Forest specimens total no more than 19. I have spent a good many summer months there since, and before, 1927, but seen no others. John Curtis took it also in south Dorset, where no one has since seen it but Dr. Haines, who has single specimens from Owermoigne on July 10, 1911, from Redbridge on July 9, 1912, and in 1909 from Moreton, where he has seen others. A fine series was in the British Museum by 1895 (Bloomfield, *E.M.M.*, 31 : 114) from Ivybridge in Devon, where a pair was taken by Mr. Matthews on May 22, 1889, and another pair by Col. Yerbury (*l.c.*, 25 : 379 and 30 : 39). Verrall refers to this strong colony, but knew it elsewhere only on the southern border of Dartmoor shortly before 1900. I may add that I met with *Eristalis rupium* Fab. plentifully in the mountains just north of Machynlleth, locally called Mackoonthla, in west Montgomery, towards the end of last June.—CLAUDE MORLEY ; February 20, 1940.

ASSOCIATION OF ANTS WITH LYCAENID LARVAE.—In the *Entomologist* for January, 1940 (*antea*, p. 20), Mr. S. G. Castle Russell asks : "Is there any evidence to show that the attendance of ants on the larvae of certain butterflies is beneficial or otherwise ?" An answer to this question may be found in *The Guests of British Ants*, pp. 111-118. It is pointed out that : "The benefit gained by the relations between these larvae and the ants is mutual, for the latter obtain a sweet secretion, of which they are very fond, by milking these larvae (trophobiosis), and the caterpillars obtain protection against their natural enemies by the presence of the ants." Furthermore the ants will build round these caterpillars earthen shelters—"cattle-sheds"—similar to those in which they often keep their aphids and coccids, etc. Russell goes on to relate that in a certain South Hants locality *Lysandra coridon* in 1938 had considerably decreased in numbers, but in 1939 the colony had regained its former abundance. This he attributes to the fact that gamekeepers had dug into the ant-heaps and had taken large numbers of "ants' eggs" to feed young game-birds, and he adds : "It would appear that the decimation of the ant colony may have been favourable to the butterfly." This I can only regard as extremely doubtful. First, the ant in question would be *Acanthomyops* (*Chthonolasius*) *flavus* F. (see *British Ants*, 2nd ed., pl. xi), and where there are such ant-hills, and game is preserved nearby, the game-keepers always dig into the hillocks to obtain the ant-cocoons for their pheasants. This I have seen myself at Ashted and other places ; and in the foreground in the plate just referred to at least two of the hillocks will be seen to have been treated in this manner. It would not, therefore, have been the first time (1939) that the South Hants ant-heaps had been dug into. Moreover the ants occur in such vast quantities in such areas that the few cocoons, comparatively speaking, taken from the top of such ant-hills would make little or no difference to the community. Secondly, as pointed out (*Brit. Guests*, p. 111), "no less than sixty-five species, representing twenty-eight genera of the *Lycaenidae* (Blues) spread over every part of the globe, have been mentioned as having caterpillars that are attended by ants." Now it seems to me that

behaviour which is so widely spread all over the world, and must have been practised for countless ages, would have been wiped out long ago should it have proved detrimental to either the caterpillars or the ants. The organs of these caterpillars utilized in the production of the sweet secretion so dearly loved by the ants have, without doubt, been improved, if not actually created, for the express purpose of attracting members of the *Formicidae*. The only thing that might be advanced as being somewhat harmful to the caterpillar is that *in captivity* the ants show a tendency to milk an individual larva too hard. As an instance, with one of Rayward's experiments with *icarus*, "the ant succeeded in inducing the larva to yield the fluid four times in one hour, but only after the most persistent and continuous coaxing." There is no case on record of a larva dying under such treatment, and on the whole any little inconvenience thus caused is far overbalanced by the protection obtained from the presence of the ants. It is also very probable that without this protection the Blues in question would be wiped out.—HORACE DONISTHORPE.

DIPTERA IN DUMFRIESSHIRE.—Recently Mr. H. Britten kindly determined some Nematocerous Diptera for me, and these, with some others already in my collection, form the substance of this note. All were taken in South-eastern Dumfriesshire. *Macrocera phalerata* Meig.; two swept on edge of a wood on Nutberry Moss in June. *Isonomyia biumbata* Edw., Springfield in early June, one only. *Mycomyia hyalinata* Meig., sweeping on a peat moss in June. *M. cinerascens* Zett., on a peat moss in October, common. *Ezechia spinigera* Winn., in flood refuse on the marsh at Gretna in February. *E. nigroscutellata* Landr., swept on Newton Moss in August. *Cordyla brevicornis* Staeg., in a wood among fungi and moss in early September. *Mycetophila lincola* Meig., beaten from birch in the wood on Newton Moss at the beginning of October. *M. stolidus* Walk., a pair beaten from *Ulex* at Browhouses in September. *Zygomyia notata* Stan., beaten from trees on Newton Moss in June. *Sceptomia nigra* Meig., sweeping in a lane in July, one specimen only. *Serromyia femorata* Fab., swept from among rushes, etc., in June and July, not uncommon. *Pentaneura carnea* Fab., taken on Nutberry Moss in September. *Procladius crassinervis* Zett., on the railway bank near Gretna in May, not uncommon. *Diamesa inscendens* Walk., from a wood fence in May. *D. campestris* Edw., one beaten from a hedgerow in April. *Cricotopus sylvestris* Fab., by beating hedgerows in April, the var. *obscurimanus* Zett. beaten from *Ulex* by the River Kirtle in April, and swept at Springfield in May. *C. albiforceps* Kieff., swept from roadside in May. *C. bicinctus* Meig., not uncommon in May. *C. trifascia* Verr. in Edw., swept near Springfield in May and on Nutberry Moss in August. *C. triannulatus* Mcq., common from May to August. *C. tibialis* Meig., several captured near Gretna in April and May. *Spaniotoma (Orthocladius) rubicunda* Meig., not uncommon about *Ulex* bushes in April. *S. hospita* Edw., one from *Ulex* on the edge of a wood at Quentin's Hill in April. *Tanytarsus tenuis* Meig., about Hawthorn hedges in May.—JAS. MURRAY; 6, Burnside Road, Gretna, Dumfriesshire.

THE ENTOMOLOGIST.

VOL. LXXIII.]

JUNE, 1940.

[No. 925]

EIGHTEENTH CENTURY RECORDS OF LEPIDOPTERA IN SUSSEX.

BY J. MANWARING BAINES, B.Sc.,

Curator, Hastings Museum.

AMONG the books of the late William Markwick (1739–1813), of Catsfield, near Battle, now in the Hastings Museum, are three quarto diaries (not four as accidentally stated, *Entom.*, 70 : 48). These are entitled “A Calendar of Flora or Naturalists’ Journal made at Catsfield near Battle, Sussex,” and cover the period from 1768 to 1776. Though chiefly devoted to botany, he included a large number of observations on both insects and birds.

He appears to have led the life of a country gentleman with plenty of time to observe nature, for he has very full accounts for each month in the year over these nine years of his diary. A typical entry runs :

“1771 February 20th. The Brimstone Butterfly *Papilio Rhamni* first appears.”

His carefulness is shown by a footnote to this entry : “I call this the first appearance of this Insect, for tho’ I saw it alive on the 14th of last Month, yet it was so much hurt by the Severity of the Weather, that it could neither fly nor crawl.”

His generic names are invariably *Papilio* but his specific names remain almost unchanged to-day, though “The Saffron Butterfly, *Papilio hyale*,” is now known as the Clouded Yellow (*croceus*). But his English names do not always agree with those used by A. H. Haworth and William Jones in the eighteenth century (*Trans. Soc. Brit. Ent.*, 1 : 139–185). The Pearl-bordered Fritillary has its old name, “the April Fritillary,” and he notes it in April on four years out of the nine under review ; the Marbled White was then “the Marmoress or Marble Butterfly,” the White Admiral “the White Admirable,” and the Small Tortoiseshell “the Nettle Butterfly.” He knew the Grizzled Skipper as “the Grizzle or brown March Fritillary.” And his records for “the Royal William or Swallow tail’d Butterfly” recall the once much less restricted range of this species ; he once records the “white black-vein’d Butterfly” (*crataegi*), now probably extinct in Britain according to Frohawk’s *British Butterflies*, 1934.

His interest in the butterflies appears to have grown from five species in 1768 to fourteen nine years later, when the diary comes to an abrupt end. His notes of first appearances are set out below in tabular form, those in brackets being the last dates on which he observed them.

	1768.	1769.	1770.	1771.	1772.	1773.	1774.	1775.	1776.
The Marmoreas or Marble Butterfly (<i>Papilio galathea</i>)	July 6	July 1	July 12	July 5	July 14	July 6	July 4	June 23	July 8
The April Fritillary (<i>P. euphrosyne</i>)	May 10	May 4	Apr. 14	Apr. 23	May 13	Apr. 29	May 7	May 5	Apr. 24
The Nettle Butterfly (<i>Papilio urticae</i>)	..	..	..	..	Mar. 25	Mar. 11	Mar. 26	Apr. 29	..
The Peacock Butterfly (<i>Papilio io</i>)	..	..	(Nov. 10)	Feb. 28	Mar. 25	Mar. 13	Mar. 17	Feb. 25	Mar. 23
The White Admirable (<i>Papilio camilla</i>)	..	July 10	July 31	July 13	July 17	July 19	..	July 1	July 12
The small blue butterfly or Blue Argus (<i>Papilio argus</i>)	..	..	..	June 5	May 7	Apr. 24	Apr. 22	May 2	Apr. 1
The white black-vein'd Butterfly (<i>Papilio crataegi</i>)	..	..	..	..	..	..	..	..	June 10
The cabbage Butterfly (<i>Papilio brassicae</i>)	May 21	May 7	June 9	May 5	May 16	May 22	Apr. 29	May 2	June 2
The smaller Cabbage Butterfly (<i>Papilio rapae</i>)	..	..	..	..	May 2	Apr. 9	Mar. 27	Apr. 21	Apr. 21
The Orange Tip (<i>Papilio cardamines</i>)	May 10	Apr. 23	May 10	May 15	Apr. 27	Apr. 20	Apr. 9	Apr. 26	Apr. 3
The Saffron Butterfly (<i>Papilio byade</i>)	..	..	..	..	..	..	..	..	Aug. 21
The Brimstone Butterfly (<i>Papilio rhamni</i>)	Mar. 18	Mar. 17	Mar. 6	Feb. 20	Mar. 6	Feb. 25	Feb. 26	Feb. 15	Mar. 1
The Royal William or Swallow-tail'd Butterfly (<i>Papilio machaon</i>)	..	..	May 22	June 5	..	May 22	..	..	May 2
The Grizzle or brown March Fritillary (<i>Papilio malvae</i>)	..	..	..	..	..	..	Mar. 31	Apr. 14	Mar. 30

A footnote during January, 1776, reads, "the most severe winter I ever remember."

NEW RECORDS FOR IRISH LEPIDOPTERA.

BY ARTHUR A. LISNEY, M.A., M.D., F.R.E.S.

THE appended list represents observations and captures over a number of years. Only the rarer species are included, and I have omitted most of those recorded as frequent or common by Donovan in his *Catalogue of the Macrolepidoptera of Ireland*.

Included in the list are new county records for twenty-three of the more local species. A number of interesting species collected in 1939 have not been included but will be dealt with in a separate paper at a later date.

The areas most thoroughly worked were the southern half of Co. Dublin (DU) and Co. Wicklow (WI), though a number of excursions were made into the neighbouring counties of Kildare (KD), Queen's County (QC) and Wexford (WX). Visits to counties Waterford (WA) and Monaghan (MO) complete the list.

I am indebted to Messrs. A. W. Stelfox, B. P. Beirne, F. N. Pierce and W. H. T. Tams for assistance in the examination of genitalia and naming of doubtful specimens and in other ways.

SATYRIDAE.

Maniola tithonus L.—WA : Cappagh. WI : Newcastle, not rare.

NYMPHALIDAE.

Euphydryas aurinia Rott.—I have not come across this species in Co. Dublin, though there are many suitable localities. In Co. Wicklow, however, it is locally common. QC : Maryborough. WI : Calary Bog ; Glen of Imaal ; Kilmacanoge ; The Murrough and Woodenbridge.

LYCAENIDAE.

Lycaenopsis argiolus L.—No second brood observed. WI : Aughrim ; Clara. DU : Ballycorus ; Shankill ; Stepaside and Whitechurch.

PIERIDAE.

Leptidea sinapis L.—WI : Rathdrum, not uncommon ; Woodenbridge, two specimens, 4. vi. 1927.

Pieris napi L.—The following ♀ aberrations referred to by Donovan were captured : (i) *radiata* Röber, (ii) *interjuncta* Cabeau, (iii) *confluens* Schima, (iv) *interjecta* Röber, and (v) *meta* Röber. I came across a small race of this species, 19. v. 1928, in a restricted locality on the banks of the canal near Celbridge, Co. Kildare, quite a number of dwarf specimens being observed and several captured. The

average wing span was 35 mm. as compared with the normal average of 40 mm.

Colias croceus Fourc.—DU : Dublin, a ♂ observed in the grounds of Trinity College, 31.viii.1931 ; Shankill, a ♀, 20.x.1921.

SPHINGIDAE.

Herse convolvuli L.—DU : Shankill ; a specimen was seen hovering over a bed of *N. affinis* 17.viii.1927, but was not captured. Seven days later, 24th, a ♀ in perfect condition was captured. Towards the end of September, 1938, while on holiday in Ireland, Mr. A. W. Stelfox, of the National Museum, Dublin, showed me a ♀ which had been captured a few days earlier in a garden at Templeogue, Co. Dublin. It had been reported to him that the moth had laid a number of ova before it died. Mr. Stelfox was able to procure these ova, eight in number, and sent them on to me, as I had returned from my holiday. We hoped that they would hatch in due course, but unfortunately they failed to do so.

Celerio livornica Esp.—During June, 1931, an influx of this species on a large scale appears to have taken place. In the garden at Shankill, Co. Dublin, I saw no fewer than 32 specimens between the 8th and 19th of that month and was able to capture most of them. The specimens were, for the most part, worn and battered, and were all females. From several of these I obtained over 80 ova, most of which hatched in due course. The larvae were fed on dock and thrived until they were almost full grown, when they began to die off one by one, only five pupating. These five pupae subsequently died, no moths being bred. A number of the larvae approached the black form recorded previously from Ireland (Longfield).

Deilephila porcellus L.—DU : Shankill, one specimen, 11.vi.1927.

Hemaris tityus L.—WI : Aughrim, one, 28.v.1928 ; The Murrrough, common. DU : Shankill, single specimens, 5.v.1929 and 11.v.1929.

NOTODONTIDAE.

Cerura furcula L.—Not uncommon in south Co. Dublin and many parts of Co. Wicklow, although Donovan gives no records from the former county and only a single record from the latter ; nor does he record this species from Queen's County, where I found it. I have, in fact, found the familiar black ova almost everywhere that I have looked for them. South states that the ova are deposited on the upper side of the leaf of willow or sallow, but with only one or two exceptions I have found them on the under surface. QC : Maryborough. WI : Enniskerry ; Kilmacanoge ; Maherabeg ; Powerscourt ; Shillelagh and Tinahely. DU : Ballycorus.

C. vinula L.—Strangely enough I have not found this species nearly so common as *C. furcula*. WI: Lough Dan; Powerscourt; Rathdrum and Tinahely. DU: Ballycorus; Whitechurch. I have an interesting note in my diary for January 7, 1926, “. . . also found a cocoon of *C. vinula* on the trunk of a birch tree, but unfortunately the pupa was partly eaten.” The cocoon was at the bottom of a deep recess in the bark and seeing that the pupa was damaged I did not bother to remove it so I am not certain that it was *C. vinula*. It was not until recently that the significance of this observation occurred to me, namely, the possibility of *C. bicuspis* occurring in Ireland and the pupa being of this species.

Pheosia gnoma Fabr. (*dictaeoides* Esp.).—WI: Powerscourt; several larvae 23.vii.1926, 8.viii.1927 and 12.viii.1927, and one 7.ix.1936.

Pterostoma palpina L.—WI: Powerscourt, several larvae on willow 23.vii.1926; Rathdrum, a ♂ at rest on a hazel twig 10.vii.1926; Tinahely, a single larva on willow 2.viii.1926.

LYMANTRIIDAE.

Dasychira pudibunda L.—Donovan states, “Common, distributed southern half of Ireland from Galway and Wicklow southwards.” I can add a locality in Co. Dublin which is apparently the first record of the species for that county. WA: Dungarvon. WI: The Devil's Glen; Kilmacanoge and Shillelagh. DU: Ballycorus.

LASIOCAMPIDAE.

Philudoria potatoria L.—WI: The Murrrough, common, particularly in the larval stage; Tinahely, two pupae and one larva, 6.vi.1927. Donovan does not record this species for Co. Wicklow.

ARCTIIDAE.

Celama cristatula Herr.-Schäff.—DU: Ballycorus, rare; Shankill, single specimens 19.v.1927, 21.v.1931, 31.v.1931 and 8.vi.1931.

Cynia mendica Clerck, race *rustica* Hübn.—All the males I have bred are white like the females. WI: Aughrim, a ♀ captured 28.v.1928 which deposited 24 ova from which I successfully bred 3 ♂ and 7 ♀; Baltinglass, a ♀ captured 6.vi.1927, but no ova obtained; Newtown Mt. Kennedy, a pupa found behind bark on a willow tree 2.i.1927 from which a ♂ emerged.

Erilema lurideola Zinck.—DU: Shankill, one specimen 9.viii.1935. According to Donovan this species is “very local and

sporadically distributed over Ireland," while *E. complana* is "widely distributed and common." I have never found the latter species.

AGROTIDAE.

Apatele leporina L.—DU: Ballycorus, single larvae beaten from sallow 3.ix.1937 and 14.ix.1938, from which one imago was bred. I have also a specimen in my collection bred from a larva given to me by J. N. Halbert, who beat it from birch in Phoenix Park, Dublin, in 1927. A scarce species in Ireland.

A. megacephala Fabr.—I have only met with this species in south Co. Dublin, where it is probably not uncommon. DU: Ballycorus, one larva on aspen 7.ix.1937; Shankill, single larvae on willow 21.vii.1926 and 10.ix.1930 from both of which imagines were bred, and three larvae 24.ix.1938 also on willow, only one of which still survives in the pupal stage.

Agrotis trux Hübn.—DU: Shankill, a specimen taken 30.vii.1926 from a flower head in the garden, about a mile from the sea coast. A local coast species in Ireland.

Euxoa nigricans L.—WI: Powerscourt, one 18.ix.1938. DU: Shankill, single specimens 26.viii.1927 and 11.ix.1938.

Peridroma porphyrea Schiff. (*saucia* Hübn.).—WI: Brittas Bay, two 13.ix.1937 and two 25.ix.1937; Powercourt, one 22.ix.1937. DU: Shankill, two 3.x.1928, three 6.x.1928, one 11.x.1928 and two 17.x.1928.

Ammogrotis lucerneae L.—DU: Whitechurch, a single specimen 9.vii.1924.

Graphiphora augur Fabr.—DU: Shankill, single specimens 16.vii.1928 and 20.vii.1931.

Amathes glareosa Esp.—WI: Maherabeg, two 13.ix.1937. DU: Ballycorus, single specimens 23.ix.1936 and 22.ix.1937. All referable to var. *rosea* Tutt.

A. c-nigrum L.—WI: Brittas Bay, one 23.ix.1937, two 25.ix.1937. DU: Shankill, one 2.x.1928.

Diarsia dahliae Hübn.—I have found this species not uncommon locally. WI: Greystones; Kilruddery and Powerscourt. DU: Shankill.

Triphaena interjecta Hübn.—DU: Shankill, single specimens 1.ix.1926 and 12.viii.1927.

Hadena thalassina Hufn.—I have only one record and this for the very early date of 17.iv.1927. No doubt the species is more frequent than this record would indicate.

Tholera cespitis Fabr.—WI: Brittas Bay, one at sugar 13.ix.1937.

Dryobotodes protea Schiff.—WI: Powerscourt, three 3.ix.1937, two 7.ix.1937 and two 22.ix.1937, all taken at sugar. Birchall

recorded this species as common in Co. Wicklow, but Kane doubted the record stating that it was founded on mistaken information. Donovan refers to this, but appears to have overlooked two specimens taken on Bray Head by Cussack (Halbert). This record and mine appear to vindicate Birchall's statement, at least to some extent, and the species may yet be found frequent in Co. Wicklow.

Episema caeruleocephala L.—DU: Whitechurch, two larvae beaten from hawthorn 24.v.1925.

Thalpophila matura Hufn.—DU: Shankill, one specimen at light 26.vii.1927.

Procus latruncula Haw.—DU: Shankill, where I have taken it sparingly.

P. furuncula Schiff. (*bicoloria* Vill.).—DU: Shankill, rare.

Apamea hepatica Hübn.—DU: Shankill, one 27.vi.1931. A local and scarce species in Ireland.

Aporophyla nigra Haw.—WI: Brittas Bay, one 23.ix.1937; Powerscourt, one 14.ix.1937. DU: Ballycorus, two 23.ix.1936, one 22.ix.1937; Shankill, one 2.x.1926, one 2.x.1928, two 3.x.1928, two 4.x.1928, one 6.x.1928 and one 17.x.1928. Another very local species not recorded by Donovan for Co. Wicklow.

A. australis Boisd.—WI: Brittas Bay, a single specimen at sugar 13.ix.1937. A very rare moth in Ireland with a distribution restricted to the south-east coast only.

Eumichtis lichenea Hübn.—I am indebted to B. P. Beirne for introducing me to this species at Seapoint, Co. Dublin, where he records it as common. I took 23 specimens from his moth trap 12.ix.1937.

Brachionycha sphinx Hufn.—DU: Whitechurch, not infrequent at light. Donovan attributes to Gwynn and myself the taking of the larvae of this species, but I am afraid his informant was not quite correct, as we have only captured it at light as stated above. As regards the locality, Whitechurch is more exact than Rathfarnham, which is the postal address of the district and is the locality given by Donovan. As far as I can ascertain this record is the first for Co. Dublin.

Mormo maura L.—WI: Bray, a single specimen in a shop window 18.viii.1925.

Celaena leucostigma Hübn.—WI: The Murrough, one 14.viii.1926.

Gortyna flavago Schiff.—WI: Delgany, one 16.ix.1936; Greystones, two 16.ix.1936. DU: Shankill, one 24.ix.1938. All four specimens were taken at light. A single previous record of this rare species for Co. Wicklow, none for Co. Dublin.

Leucania straminea Treits.—WI: The Murrough. I swept a larva, 29.v.1927, and successfully bred the imago, which emerged

6.viii.1927. A very rare species, the few previous records are for the south and west of Ireland.

Stilbia anomala Haw.—DU : Shankill, one at light 23.ix.1936.

Amphipyra pyramidea L.—WI : Brittas Bay ; The Devil's Glen ; Glen of the Downs ; Kilruddery and Powerscourt. DU : Ballycorus ; Shankill ; Templeogue and Whitechurch. In several of these localities the species is common at sugar.

Orthosia gothica L.—DU : Shankill, common. One example of the ab. *gothicina* Herr.-Schäff. 10.iv.1928.

Omphaloscelis lunosa Haw.—DU : Shankill, common. Donovan states that he has found the red coloured type in Co. Cork. I have a number of specimens with the typical colouring and also several approaching the black form.

Anchoscelis helvola L.—WI : Brittas Bay, five 23.ix.1937 and sixteen 25.ix.1937. According to Donovan this is a rare and local species in Ireland.

Comistra ligula L.—DU : Shankill, single specimens of the ab. *spadicea* Haw. at ivy 18.xi.1928 and 20.xi.1928. Two specimens of this rare species have been recorded from Glenageary, Co. Dublin (Beirne), and are the only previous records for the county. Kane considered that Birchall's record of this species for Co. Wicklow was a mistake, but I agree with Donovan, who is of the opinion that it probably occurs in that county.

Graptolitha ornitopus Hufn.—WI : Rathdrum, a larva beaten from hazel 19.vi.1927.

Cucullia chamomillae Schiff.—DU : Shankill, one at wallflowers 9.iv.1927.

Pyrrhia umbra Hufn.—DU : Shankill, one 22.vii.1926, one 5.vii.1928, two 6.vii.1928 and single specimens 13.vii.1928 and 15.vii.1928. All were taken at flowers in the garden. This is a local and scarce species chiefly occurring in the southern half of Ireland.

Heliothis peltigera Schiff.—DU : Shankill, single specimens 28.vi.1928, 30.vi.1928, 5.vii.1928, 8.vii.1928, 11.vii.1928 and 11.vi.1931. All were captured while dusking in the garden. These are the only records of this rarity for Co. Dublin.

Eustrotia uncula Clerck.—WI : Shillelagh, one 5.vii.1927.

Phytometra viridaria Clerck.—DU : Ballycorus, one 21.iv.1929.

Plusia festucae L.—WI : Tinahely, one pupa 6.vi.1927, imago emerged. DU : Shankill, single specimens 10.vi.1926, 21.vii.1926 and 9.viii.1935.

P. iota L.—DU : Shankill, one 22.vii.1926.

Abrostola triplasia L.—DU : Shankill, single specimens 2.vii.1928 and 11.vii.1928.

(To be continued.)

LEPIDOPTERA IN THE SCILLY ISLES IN AUGUST, 1939.

BY C. GRANVILLE CLUTTERBUCK, F.R.E.S.

As very little seems to have been published on the Lepidoptera of these interesting islands since Dr. K. G. Blair's article (1925, *Entom.*, 58 : 3) some account of our experiences there may be of interest.

My wife and I left Gloucester on August 14, and after spending the night at Penzance duly arrived at St. Mary's at 12.30 p.m. the next day.

The Scilly Isles number about 145 islands, some mere rocks, but only five are inhabited, viz. St. Mary's (the largest—nine miles in circumference), Treco, St. Agnes, Bryher and St. Martins, and the native population is about 1700. They are remarkable for their wild and rugged coast scenery, the mildness of their climate and their luxuriant vegetation. They are composed wholly of granite—the hills nowhere rise more than 200 ft. above sea-level, and they are intersected by fertile valleys in which many species of plants and flowers grow in tropical profusion.

The Garrison, with its dismantled batteries, forms a delightful promenade about a mile long round the hill behind the hotel and by beating the gorse bushes we took specimens of *Endotricha flammealis* Schiff., *Phlyctaenia ferrugalis* Hübn., and *Depressaria umbellana* Steph. On St. Mary's we took specimens of the bright fulvous race of *Maniola jurtina* L. resembling the Mediterranean race *hispulla*. Two females were also taken with extra spots on the underside of the fore wings. A large race of *Aglais urticae* L. was also common.

On August 17 we travelled by the motor-boat "Zedora" via the Eastern Isles to Treco, the second largest island. Besides the whites the only butterfly noticed in Major Dorrien-Smith's magnificent gardens was *A. urticae*. Towards the northern end of Treco I netted a worn male *Lasiocampa quercus*. On the way to Cromwell's Tower I took a specimen of *Eucosma similana* Hübn. I was informed that Major Dorrien-Smith had taken a Milkweed Butterfly (*Danaus plexippus*) in these gardens, but on writing to him he said that he had only seen but not taken one, and he advised me to call on Mr. John Moore, who had the only collection of Lepidoptera in the Isles. Upon calling on Mr. Moore he very kindly showed me his collection, which included such rarities as *Uraba albula* Hübn.

Lithosia quadra L. (taken on a rock in St. Martin's Bay), *Utetheisa pulchella* L., *Nymphalis polychloros* L., etc.

On the 18th I was busy taking *Vanessa cardui*, *Aglais urticae* and *Polyommatus icarus* in a nearby clover field. Later in the day at Peninnis my wife boxed a specimen of a very well marked form of *Crambus geniculeus*. It had some curious dark brown markings on the disc joining the median and second lines. She also boxed *Plutella maculipennis*, and in the same box was a specimen of *Phthorimaea plantaginella* Stt. I am indebted to Mr. H. Stringer for identifying the last-named from a photograph by Mr. S. A. Pitcher, of Gloucester. At the same place I took *Eucosma citrana* and, on a fence, three *Sciaphila consequana*. One afternoon we went by motor boat to St. Agnes. Lepidoptera were scarce, only a few *V. cardui*, *Maniola jurtina* and *P. icarus* being seen. The last-named was more variable in the Scilly Isles than I have known it elsewhere—chiefly in the direction of elongated spots and the var. *arcua*.

Vanessa cardui seemed to be fairly plentiful in the different islands, and at one time no less than five were flying round me in a small clover field. All the fields seemed very small, especially where the bulbs were grown, and they were well protected by hedges of *Veronica*, *Escalonia* and *Euonymus* as high as 15 ft. *Vanessa atalanta* was not so common, but on the 19th I saw a worn specimen on flowers of fennel, whilst on the 25th a fine fresh one was netted basking on a wall near the golf links, and on the 28th another freshly emerged specimen was boxed off *Veronica*. A large form of *Hydriomena bilineata* was common in the Islands.

In the afternoon of the 26th we went to Samson Island—"Armored's Home." Lepidoptera were scarce, the island being terribly overgrown by bracken. We only saw a few *M. jurtina*, *P. icarus*, six *V. cardui* and one *V. atalanta*.

On the 27th we walked over to Pelistry Bay. On the way we beat out of the hedge *Depressaria umbellana*, *Crambus geniculeus* and *Pterophorus monodactylus*. We continued our walk round the cliffs through the bracken, and in addition to the species already mentioned we beat out a specimen of *Hydriomena ocellata*.

On the last day of our stay, August 28, a sea mist came up, and so we walked to Porthloo beach and saw the ruins of "Harry's Walls." During a gleam of sunshine *Vanessa urticae* appeared on the wing. On the way a worn *M. forficaris* was seen and in the hotel *Ephestia elutella* was boxed. The next day, August 29, we returned to the mainland by the "Scillonian," missing the U-boats by five days only. We had spent a most enjoyable fortnight in these remote Islands and the following is a list of the Lepidoptera taken or observed :

<i>Maniola jurtina</i> L. (<i>janira</i>).	<i>Hydriomena sordidata</i> Fabr.
<i>Vanessa atalanta</i> L.	(<i>elutata</i> Hübn.).
<i>V. cardui</i> L.	<i>H. ocellata</i> L.
<i>Aglais urticae</i> L.	<i>H. bilineata</i> L.
<i>Polyommatus icarus</i> Rott.	<i>H. immanata</i> Haw.
<i>Lycaena phlaeas</i> L.	<i>Nomophila noctuella</i> Schiff.
<i>Pieris brassicae</i> L.	<i>Pyrausta cespitalis</i> Schiff.
<i>P. rapae</i> L.	<i>Endotricha flammealis</i> Schiff.
<i>P. napi</i> L.	<i>Eurrhynx urticata</i> L.
<i>Arctia caja</i> L. (larva).	<i>Phlyctaenia ferrugalis</i> Hübn.
<i>Spilosoma lutea</i> (<i>lubricipeda</i> L.)	<i>Mesographa forficata</i> L.
(larva).	<i>Pterophorus monodactylus</i> L.
<i>Euproctis chrysorrhoea</i> L. (<i>aurea</i> Fabr.).	<i>Crambus culmellus</i> L.
<i>Lasiocampa quercus</i> L.	<i>C. geniculatus</i> Haw.
<i>Cryphia muralis</i> Forst. (<i>glandifera</i> Hübn.).	<i>C. selasellus</i> Hübn.
<i>Apamea didyma</i> Esp. (<i>oculea</i> Guen.).	<i>Ephesia elutella</i> Hübn.
<i>Caradrina clavipalpis</i> (<i>cubicularis</i> Borkh.).	<i>Polychrosis littoralis</i> Curt.
<i>Agrotis puta</i> Hübn.	<i>Argyroproctis lacunana</i> Dup.
<i>Triphaena pronuba</i> L.	<i>Cnephasia conspersana</i> Dougl.
<i>Sterrhia dimidiata</i> Hufn. (<i>scutulata</i> Borkh.).	<i>Laspeyresia ulicetana</i> Haw.
<i>Scopula marginipunctata</i> Göze.	<i>Eucosma similana</i> Hübn.
<i>Gymnoscelis pumilata</i> Hübn.	<i>E. citrana</i> Hübn.
	<i>Plutella maculipennis</i> Curt.
	(<i>cruciferarum</i> Zell.).
	<i>Depressaria umbellana</i> Steph.
	<i>D. assimilella</i> Tr.
	<i>D. badiella</i> Hb.
	<i>Phthorimaea plantaginella</i> Stt.

Of these, *elutella*, *similana*, *badiella* and *plantaginella* are apparently new records.

23, Heathville Road,
Gloucester;
November 18, 1939.

UNEXPECTED FINDS.—With reference to Brig.-Gen. J. B. G. Tulloch's interesting remarks under the above title, "the somebody called Loxham" whom he cannot trace was, I believe, George Loxham of Lancaster, who worked in that district for over forty years. His name frequently appears in the list of the Macrolepidoptera of Lancaster and District compiled by C. H. Forsythe, *vide Entomologist*, 1905, 38 : 86.—THOMAS GREER; Dungannon.

VANESSA ATALANTA IN MARCH.—Yesterday, March 3, I saw on the Downs near Lewes a Red Admiral butterfly (*Vanessa atalanta*). It was in good condition, and, surely, must have been hibernating in the locality.—E. J. BEDFORD; Lewes Borough Museum, Albion Street, Lewes, Sussex.

SOME SPECIES AND RACES OF RHOPALOCERA DESCRIBED BY H. C. LANG.

BY B. C. S. WARREN.

I HAVE been looking over a copy of Lang's *Rhopalocera Europae* that I have recently been given, and am left wondering why his contemporaries paid so little attention to this very accurate piece of work. The detailed references Lang gives, mostly with dates, are sufficient to mark the work as much superior to many which succeeded it.

Lang states in the preface that he was permitted to draw on the Godman and Salvin collection for specimens to figure and describe; from that source he described a number of species and races (some very well-known ones) which are currently attributed to Staudinger and other authors, but of which he, apparently unintentionally, was the author. One can understand continental writers following Staudinger's catalogue and ignoring Lang (many of them still seem to regard it as a law that cannot be contravened), but that the English entomologists of his day should also have done so is almost incredible.

Godman and Salvin evidently got large numbers of specimens from Staudinger, with MS. names from his price lists, and many of these were described by Lang, using Staudinger's MS. names. Some of these names had been published already by Alphéraky and others, but the remainder were only described later on, i.e. after Lang. The following names must therefore be attributed to Lang in future.

Erebia radians Lang, 1884, *Rhopal. Eur.* 320; in place of *Erebia radians* Staudinger, 1886, *Stett. e. Z.* 47: 240.

Erebia tianschanica Lang, 1884, *l.c.* 320; in place of *Erebia sibo* var. *tianschanica* Heyne, 1894, in Rühl, *Palaerkt. Grossschmett.* 1: 501.

This race is referable to *Erebia ocnus*; it will be noticed that Lang omitted the "s" which had doubtless been put in by Staudinger.

Pararge epaminondas Lang, 1884, *l.c.* 328; in place of *Lethe epimenides epaminondas* (Staudinger), 1887, *Rom. Mém. Léop.* 3: 150.

Satyrus cordulina Lang, 1884, *l.c.* 325; in place of *Satyrus actaea cordulina* Staudinger, 1886, *Stett. e. Z.* 246.

Hypermnestra helios var. *maxima* Lang, 1884, *l.c.* 365; in place of *Hypermnestra helios maxima* Groum-Grshimaïlo, 1890, *Rom. Mém. Léop.* 4: 141.

Polyommatus sultan Lang, 1884, *l.c.* 368; in place of *Lycaena sultan* (Staudinger), 1886, *Stett. e. Z.* 202.

Lycaena iris Lang, 1884, *l.c.* 369; in place of *Scolitantides* (?) *iris* (Staudinger), 1886, *Stett. e. Z.* 107.

Lycaena pretiosa Lang, 1884, l.c. 370; in place of *Thecla sinensis pretiosa* (Staudinger), 1886, *Stett. e. Z.* 209.

Lycaena eversmanni Lang, 1884, l.c. 370; in place of *Plebejus* (?) *eversmanni* (Staudinger), 1886, *Stett. e. Z.* 205.

Lycaena eros var. *amor* Lang, 1884, l.c. 371; in place of *Polyommatus eros amor* (Staudinger), 1886, *Stett. e. Z.* 211.

Note.—The adoption of Hübner's name *Papilio tithonus* for this species appears to be mistaken, for it is a primary homonym of *Papilio tithonus* L. In the twelfth edition of the *Syst. Nat.*, p. 537, Linnaeus used the name "*tithonus*," though he is usually quoted by the older authors as having written "*tithonius*." Ochsenheimer (*Schmett. Eur.* 1 (2) : 235) explains in a short note that the reprint of the twelfth edition of the *Syst. Nat.*, which was published in Vienna, did not include the appendix of that work, and that many entomologists who depended on the reprint never saw the description of *P. tithonus*.

Lycaena icarus var. *xerxes* Lang, 1884, l.c. 372; in place of *Agrodiaetus damone xerxes* (Staudinger), 1899, *Dt. e. Z.* "*Iris*" 12 : 143.

PARARGE MEGERA IN HANTS IN MARCH.—On March 25, 1940, while crossing a wind-swept heath near Aldershot (Hants), I sighted a medium-sized brownish butterfly on the wing, and after a somewhat hectic chase succeeded in examining it at close quarters. Though I had never before noted the Speckled Wood in this particular stretch of open country—a favourite haunt of the sun-loving Wall-brown—I naturally expected to find that I had happened on a rather early *Pararge aegeria*, but much to my surprise the insect turned out to be quite unmistakably a specimen of *P. megera*. Despite the high wind, and minus a net, I did my best to capture it, but failed to do more than confirm my initial identification. Since *megera* does not normally appear till May (last season—a rather late one—I first noted it on May 26), I should be interested to hear if it has ever been observed so early elsewhere. None of the authors I have consulted quotes a comparable record. Normally *Gonepteryx rhamni* is the first butterfly to be noted in my records; but this season it did not put in an appearance till April 6, as against February 11 last year. *Aglais urticae* was first seen on March 11, basking on a wall in the heart of the town; in view of the abnormal "freeze-up" and subsequent adverse weather conditions this seems a rather early record, though probably this isolated specimen had hibernated indoors. However, a fair number of *urticae* had been noted up to the end of the second week of April, including no less than seven on April 6; two pairs were courting. This compares very favourably with last season, when the species was first seen on April 9. Up to April 16 *Nymphalis io* had not appeared, while Pierids (other than *rhamni*) had yet to be recorded.—PETER MICHAEL; Davena, 56, Cranmore Lane, Aldershot, Hants.

AN INSTANCE OF SPIRAL SEGMENTATION IN *SPILOSOMA MENTHASTRI* ESP.

BY ERIC EVANS.

THE following account of spiral segmentation in the larva and pupa of *Spilosoma menthastri* Esp. is, I believe, the first recorded occurrence in this country of this abnormality in an *Arctiid*. Dr. E. T. Learned, however, has described spirals in a brood of *Apanthesis nais* Dru. in America. The *menthastri* example is a right-handed dorsal spiral, the arrangement of which is shown more plainly in the pupa than in the larva. It starts on the left side of the tergite of the second abdominal somite, the right half of which is joined to the left of the 3rd abdominal tergite, and the spiral ends with the remaining half of the 3rd. As with other observed dorsal spirals the corresponding sternites behave normally, but the somites immediately above and below the spiral show slight modification to fit the abnormal ones.

The larva was severely twisted out of alignment (Figs. 1 and 2 show its characteristic posture) and the dorsal left halves of the 3rd and 4th abdominal somites and the right half of the 2nd were large, whereas the two unattached halves of the 2nd and 3rd were small. On each of the latter half tergites there was a branch from the orange dorsal stripe, quite as thick as the dorsal line itself at its widest and extending a distance almost equal to the line on a normal segment, and the continuation of the dorsal line forward from each of the branch junctions was very narrow. The disposition of the verrucae, setae and other characters appeared normal except on the left half of the 2nd abdominal somite and the right half of the 3rd, where they were pushed over to the left and to the right respectively (see Fig. 1), the large verruca being some way down the side. Normally there is a pair of small black spots with the dorsal stripe running between them placed to the front of each tergite in the first eight abdominal somites. These spots on the left half of the 3rd and the right half of the 2nd abdominal somites came just below the point where the dorsal line branched into the left half of the 2nd abdominal somite, the spot belonging to which was placed close to them; the three spots thus formed a triangle in the Y-piece of the dorsal line. The formation was repeated at the other end of the spiral.

This example occurred in a batch of some 200 larvae hatched on June 18-19, 1939, from ova laid on June 5-6. There were slightly over 200 ova and only a few failed to hatch. The eggs were laid inside a glass-bottomed pill-box by a moth taken at Ewhurst, Surrey, and to my knowledge were not interfered with in any way before hatching, apart from a 200-mile journey by road, when they

may have got shaken. One other larva appeared to have a slightly malformed mesothorax, larger on one side than the other, but unfortunately the larvae were disturbed and this one disappeared before I examined it closely. Otherwise I noticed no unusual segmentation in the brood, but it is possible that some less obvious somatic anomalies escaped me. Early larval mortality was probably not above 10 per cent.

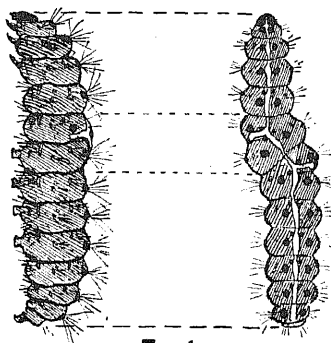


FIG. 1



FIG. 3

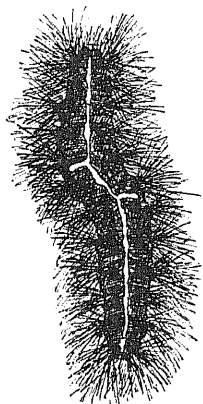


FIG. 2

FIG. 1.—Larva on July 17, two days before moult.

FIG. 2.—Larva on July 21, two days after moult.

FIG. 3.—Pupa.

The spiral was not noticed until the end of the penultimate larval stadium. What drew my attention was the odd position (Fig. 1) taken up by the caterpillar before ecdysis. It had no difficulty with its moult on July 19, the arrangement of the somites being just the same in the next instar (Fig. 2). Spinning up began on July 29. The larval twist to the right is perpetuated in a slight bulge on the right side of the pupa (Fig. 3).

Though rare, it is probable that spiral segmentation occurs more

frequently in *Lepidoptera* than the records would lead one to suppose. Dr. E. A. Cockayne has described it in *Earias chlorana* L., *Pieris rapae* L., *Hipocrita jacobaeae* L., *Lygris pyraliata* F., *Hadena dissimilis* Kn., *Moma orion* Esp., and *Hoporina croceago* F.; Dr. E. T. Learned in *Apantesis nais* Dru.; and Mr. C. N. Hawkins in *Amathes (Orthosia) macilenta* Hb., *Lycia hirtaria* Clerck, and *Lithophane (Xylina) socia* Rott. (*petrificata* F.). I am much indebted to Mr. N. D. Riley, Mr. Hawkins and Dr. Cockayne for drawing my attention to previous records of spirals.

REFERENCES.

- COCKAYNE, E. A. (1929).—*Trans. Ent. Soc. Lond.*, **77** : 177 *et seq.*
Idem (1931).—*Ibid.*, **79** : 308–9.
Idem (1934).—*Trans. R. Ent. Soc. Lond.*, **82** : 165 *et seq.*
 HAWKINS, C. N. (1933).—*Ibid.*, **81** : 223 *et seq.*
Idem (1938).—*Proc. R. Ent. Soc. Lond. (A)*, **13** : 92 *et seq.*

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NOTES AND OBSERVATIONS.

EPINEPHELE TITHONUS AB. LUCIDA NOV.—During August of 1938 I obtained an interesting aberration of this locally abundant Satyrid, which I recorded in the October *Entomologist* for 1939 (**72** : 227). Since that date Mr. Edelsten has kindly confirmed my statement that it is possibly different from any named form, and I take this opportunity of describing it:

♂. *Upperside*.—Normal rich-fulvous ground-colour, between the median sexual blotch and the broad outer marginal band, replaced by white, uniformly on each side. Elsewhere the ground-colour is typical. The bipupillate, sub-apical ocellus is considerably diminished in intensity and magnitude, and each pupil is visibly encircled with fuscous-brown. The hind wings are void of spots. *Underside*.—Typical, except for a vaguely defined, ochreous area just preceding the broad outer marginal band. The ocellus normally bipupillate, larger. The hind wings bear the two outermost spots.—R. S. BYLES; 49, Central Road, Wembley, Middx.

PROCUS LITEROSA (HAW.) AB. AETHALODES AB. NOV.—On July 31 I took at Sandbank, near York, a melanic specimen of *Miana literosa* which I understand has not yet been described, though I note that Dr. Heslop Harrison records "very fine melanic forms" from Birtley Fell, Durham (1919, *Entom.*, **52** : 52):

Fore wings smoky-black, through which the stigmata outlines and the narrow c-c mark show in deep black and the rosy clouding is seen much as the red in *Notodonta dromedarius* ab. *perfusca*. Hind wings deep grey-brown. Head and thorax rosy black, abdomen deep grey-brown. Legs black. Type specimen, apparently a male, in coll. Mihi.

Incidentally on the same evening I found *Enargia paleacea*, *Parastichtis suspecta* and *Epione vespertaria* plentiful, and took specimens

of *Deilephila elpenor*, *Glostera pigra* (larvae also common), *Cybosia mesomella* and *Sterrhia inornata*, also *Apamea monoglypha* in great variety, including forms quite as dark as some later obtained in Scotland.—AUSTIN RICHARDSON; Beaudesert Park, Minchinhampton, Glos.

PHLOGOPHORA METICULOSA LARVAE ON SNOW.—On February 1 last I was surprised to find a *meticulosa* larva crawling over the surface of snow at 7 a.m. It was very much alive and in excellent condition. There had been snow lying to a depth of $4\frac{1}{2}$ in., and on the date mentioned a thaw had set in. For some time past the ground had remained frozen to a depth of some inches and there were severe air frosts. The temperature at the time the larva was found was 34 degrees in the air and 31 degrees over the snow. On February 17 three more larvae were found crawling over a fresh fall of snow, which was then lying to a depth of $4\frac{1}{2}$ in. The ground over which these larvae were found was grass covered and was still frozen. The air temperature at the time was 30 degrees. It would be interesting to learn whether other readers have noted similar occurrences, and could suggest an explanation as to how and why these larvae came to be on top of the snow covering.—A. E. MOON, F.R.Met.S.; The Furnace, Horam, East Sussex.

UNUSUAL BEHAVIOUR OF TAENIOCAMPA MINIOSA LARVAE.—In May, 1939, I took from a small oak tree at Bookham, Surrey, a "nest" of young *Taeniocampa miniosa* larvae whose behaviour was somewhat unusual, in that they did not desert their web when still small but continued their gregarious mode of living until after the last moult. After this moult they did not take kindly to the oak with which they were provided, but merely nibbled it, so a quantity was obtained from four separate trees with no better result. Dock, dandelion and buttercup also having been refused, birch and cultivated plum were tried and these proved acceptable, a preference being shown for the latter. When full fed and about to burrow into the earth it was noticed that the ground colours of several of the larvae had become a beautiful purple, a few were a dull black, while the colour of the remainder had merely faded. It was considered that the black individuals were unhealthy, probably dropsical, but this proved to be wrong for all have now become moths.—A. A. W. BUCKSTONE; 90, Pams Way, Ewell, Surrey.

DESTRUCTION OF PIERIS BRASSICAE BY BIRDS.—I have recently received letters from Lord Bolingbroke telling me of his very interesting observations concerning *Pieris brassicae* being destroyed in large numbers by Great Titmice. He says: "During August, when Large White butterflies were abundant in the garden here (Swindon), I was interested to find that they were particularly subject to attack by parties of Great Tits. By the end of that month I picked up no fewer than 30 wings and pieces of wings from under a single buddleia about 25 ft. high which spread its upper branches among those of an adjacent apple tree, the leaves of which helped to provide the tits with considerable cover from which to launch their assaults. With the exception of one ♂ brimstone wing they were all those of the Large

White. On one occasion I watched the tits making their attacks, but owing to the thick foliage of apple and buddleia combined it was difficult to see exactly what happened to the insects' bodies. I know that tits are sometimes inclined to attack the larger insects, but hardly to the same extent or with such consistent zeal as these were doing at every opportunity. There were other species of butterflies, such as tortoiseshells, walls, etc., on the buddleia at the same time as the whites, but these seemed immune from attack. One or two Blue Tits were usually in the same tree at the same time, but I never saw them actually dashing at the *brassicæ* as did the Great Tits."

Lord Bolingbroke's observations remind me of parties of chaffinches (old and young) which I watched one year in the New Forest, catching and feeding on *Argyrimus paphia*. Judging by the large number I saw caught by these birds they must have destroyed an enormous quantity. Lord Bolingbroke has also kindly sent me all the wings and pieces near the picked up. Among them is one with the wings intact but only held together by the sides of the thorax.—F. W. FROHAWK; January, 1940.

SOME NOTES ON *HYLOICUS PINASTRI*.—Last year I spent some time in search of this species in this area. I found 16 specimens, enumerated below, on pine trunks, all except two in the same locality, i.e. lines of firs bordering open heath land, the first which would be met with in an open flight, under three miles from Brockenhurst. It is somewhat curious that they were all in the same area of that locality, within about 400 yds. of one another. It makes them appear localized as though they return to the same area, in much the same way as birds return to the same place to roost. It appeared that they preferred to be on trees near the end, or broken end of a line; it was noticed that all except two were so placed, and that none at all was found on interior trees. Contrary to what might be expected they are quite easily seen, all were on the leeward side, none being high on the trunk. There appears to be no doubt at all that *H. pinastri* is a very hard-flying insect and very quickly deteriorates consequently, the points and ends of the fore wings soon going, chipping and breaking quickly; even when apparently in quite fresh condition, on being held up to the light these parts can be seen worn thin, with the scales gone, showing good strong flights having already taken place. The following list also shows, by the varying condition of the specimens, that emergence must cover a lengthy period; indeed the period is probably much longer, as I did not come across this locality until the date I found the first one, and one was taken at light at Brockenhurst on June 10. I did, in fact, apart from these 16 insects mentioned, actually see another one in flight in bright sunshine; it had evidently been disturbed, and although flying by day, flew very rapidly in a straight line and finished up in the heather. An important point to collectors is that *H. pinastri* is amongst the "noisy" insects, being quite impatient of the box, and capable of knocking itself to bits in half an hour if so minded. This fine and very welcome insect appears to be spreading rapidly each year, and having now reached the vast acreages of pines in the New Forest should establish itself thoroughly,

if indeed it has not already done so. In the following table the reference to feet indicates the height above ground of the specimen when found.

June

26, ♀, 5' . Fresh condition, but held up to light thin scales at ends of fore wings showed some strong flights.

July

3, ♂, 6' . Ditto.

8, ♂, 6' . Completely worn and ragged, fore wings broken and chipped off short.

14, ♂ and ♀, 4' , in copula. Both as the first one.

15, ♀, 6' . Good condition, but thin scales on ends of fore wings showed strong flying.

16, ♀, 5' . Fair condition except for ends of fore wings.

16, ♂, 8' . Fresh condition apart from ends of fore wings badly broken.

19, ♂, 4' . Good condition, but thin scales end of fore wings.

19, ♂, 7' . Ditto.

22, ♂, 9' . As the first one.

25, ♂, 4' . Fair condition except for ends of fore wings.

26, ♀, 7' . Good condition, scales thin end of fore wings.

29, ♂, 6' . Fair condition except for ends of fore wings.

30, ♂, 4' . Poor condition generally.

30, ♂, 5' . Ditto.

—E. E. JOHNSON ; "Oaklands," Brockenhurst, Hants.

ANALYSIS OF LEPIDOPTERA EATEN BY BATS.—On the night of August 5, 1939, a number of Dark Arches (*monoglypha* Hufn.) were attracted to light at a bungalow in Little Common near Bexhill. This is a species which is reinforced by immigration and it is thought that these specimens were immigrants. They were attacked by bats believed to be the Common Pipistrelle (*Vespertilio pipistrellus* Schr.), which is very common in that locality, but this could not be confirmed definitely. A careful search was made below the windows and a number of fragments recovered. With the exception of one right fore wing of a Brown-line Bright-eye (*conigera* F.) in very good condition, all the remains belonged to *monoglypha*. There were nine left fore wings, of which five were without the hind wings, and four had the hind wings attached. Of the latter, one had the head and first pair of legs as well, and three had the head only. Of the seven right fore wings, two had the hind wings (one of which had the head only, and one the head and first pair of legs), and five had no hind wings (one with the head and four without it). In addition there were three separate left hind wings and five right hind wings, one head with fore legs attached and two separate legs. Despite a long search no further remains could be found, having either been blown away or removed by the bats, when they ate the bodies. The disjuncta membra were sorted into eight heads, nine left and seven right fore wings, seven left and seven right hind wings, thus accounting for at least nine specimens. These were examined to see if any light could

be thrown on the method of attack. Instances of sudden dives by the Long-eared Bat (*Entom.*, 72 : 190) showed that the bat hovered before making its attack, and that each of these attacks was successful.

Single wings	18
Fore and hind wings	6
Fore and hind wings and head	4
Fore and hind wings, head and legs	2
Bodies only	0

From this it appears that the bat or bats attacked their prey from behind while the moths were fluttering up and down the window-pane attracted by the light, and that in four out of the nine or more moths, the body had been seized at an angle so that all the wings of one side as well as the head were left in one piece. In six cases all the wings of one side had been left. Four attacks had been made from the left and two from the right. This was to a certain extent confirmed by experiment. A pair of V-shaped pliers approximating as closely as possible to the bat's mouth proved unwieldy, and a pair of entomological forceps were substituted. Sudden darts, resembling as much as possible those made by bats, were made at the only moths available, *monoglypha* and *pronuba* L. It was noticed that when these were fluttering up and down a window-pane their bodies were generally at right angles to the glass in a vertical plane, though inclined horizontally. Thus any attack in a vertical plane had almost certainly to be made at an angle. It was extremely difficult to get immediately behind the body, where such an attack by a bat might be expected to shear off all the wings at one time, and leave no fore and hind wings attached. It was also very clear that the bat must have been able to regulate the depth of its dive very accurately, for none of the eight heads was damaged by concussion with the glass, which was constantly happening in the experiments. In addition, as each dive was invariably successful on the occasion referred to above, each must have been made at a greater speed than could be conveniently reproduced by the human hand and forceps.—J. MANWARING BAINES; Hastings Museum, August 15, 1939.

Corrigenda.—Page 35, line 26, for *flavicincta* read *flavicinctata*; p. 68, line 22, for "1885" read "1875"; p. 14, line 5 from bottom, for "Alsiid" read "Alysiid"; p. 15, line 26, for *Dryctes* read *Doryctes*; p. 17, line 6, for "Wexm" read "Wesm"; p. 20, line 6, for "Chalcid" read "Proctotrupid"; p. 71, line 5 from bottom, ab. *unicolor* should be ab. *pallida*; line 10 from bottom, Mr. Costa should be Mr. Coote.—ED.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The Chapter House, St. Thomas's Street, Borough, London Bridge.—December 9, 1939.—Mr. F. Stanley Smith, Vice-President, in the Chair.—Dr. K. G. Blair exhibited a series of *Cicindela campestris* (Col.) to show aberrational and local variation; Mr. F. D.

Coote, a living example of *Polygonia c-album* from Cheam, Surrey; Dr. C. M. de Worms, four examples of *Crymodes exulis*, f. *assimilis*, and read notes on its occurrence and habits, and he also showed a number of his captures during the 1939 season, many from Scotch localities; Mr. C. N. Hawkins, a comparative series of *Nyssia zonaria*, one from Lancashire and Cheshire, and the other the results of in-breeding from ova laid by a female taken in the Isle of Coll, and made remarks on these results, which did not bear out the statements of Prof. J. W. H. Harrison that the Coll form was quite distinct; Mr. J. A. Downes, a collection of Mecoptera, mainly from North America; Mr. S. Wakely, a series of the extremely local Pyrale, *Pyrausta nubialis*, bred from larvae found in stems of *Artemisia vulgaris*, at Benfleet, Essex; Mr. E. F. Syms, pupae of *Pieris brassicae* showing variation in colour and shading in accord with the character of the surface where pupation took place, viz. light in colour on a ceiling, dark on a dusky brickwork joint; Mr. H. J. Turner, series of selected examples of *Spilosoma lutea* (*lubricipeda*), including the varieties *eboraci*, *fasciata* and *zatima*, and noted a long-lasting error in the specific name.

January 13, 1940.—ANNUAL MEETING.—Dr. H. B. Williams, F.R.E.S., President, in the Chair.—The Treasurer's Annual Statement, the Balance-Sheet and the Council's Report were presented and passed *nem. con.*—The list of Officers and Council for the ensuing year, 1940, was also passed: *President*, Dr. E. A. Cockayne, A.M., F.R.C.P., F.R.E.S.; *Vice-Presidents*, Dr. H. B. Williams, F.R.E.S., and J. O. T. Howard, M.A.; *Hon. Treasurer*, T. R. Eagles; *Hon. Librarian*, E. E. Syms, F.R.E.S.; *Hon. Curator*, S. R. Ashby, F.R.E.S.; *Hon. Secretary*, S. N. A. Jacobs; *Hon. Minutes Sec.*, H. G. Denvil; *Hon. Lanternist*, J. H. Adkin; *Hon. Editor of Proceedings*, Hy. J. Turner, F.R.E.S., F.R.H.S.; *Council*: F. D. Buck, G. V. Bull, B.A., M.B., R. J. Burton, F. D. Coote, F.R.E.S., J. A. Downes, B.Sc., F.R.E.S., F. T. Grant, F. Stanley Smith, F.R.E.S., G. R. Sutton, S. Wakeley, Baron de Worms, D.Sc., M.A., F.R.E.S., etc. The retiring President then read an address on the genus *Gonepteryx*, illustrated by a large number of coloured drawings and specimens of species and aberrations from his own and other collections. Votes of thanks were then passed to the retiring officials.

ORDINARY MEETING.—Dr. E. A. Cockayne, A.M., F.R.E.S., President, in the Chair.—Mr. F. D. Buck exhibited a female and larvae of the Coleopteron *Megatoma undata* and read notes on the biology of the species. He also showed two examples of the local *Stenus fornicatus* (Col.) from Epping Forest; Mr. C. Down, aberrations of Lepidoptera from Torquay.

February 10, 1930.—Dr. E. A. Cockayne, A.M., F.R.E.S., President in the Chair.—Mr. R. F. Haynes, exhibited specimens of *Actias selene* bred from larvae fed on garden plum; Mr. S. Wakely, the dark form of *Ennomos autumnaria* from Kent; Mr. Howard, *Lycia hirtaria* ab. *denigrata* taken wild in Hampstead, also a bred *Arctia caja* from Cornwall dwarfed on the R. side but perfect; Dr. G. V. Bull, a ♀ *Polyommatus coridon* with streaks on the right fore wing, and *Lithosia caniola* from Rye. Mr. N. G. Wykes gave an address on the *Troides*

section of the bird-winged butterflies and exhibited a large number of coloured drawings of many species and forms.—Hy J. TURNER (*Hon. Editor of Proceedings*).

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November 18, 1939.—Mr. B. B. Snell exhibited a very interesting lot of Lepidoptera representing part of his work in the past season. His long and varied series of *Boarmia repandata* included a beautiful set of the white ground-coloured form and white ground var. *conversaria* from Ross-shire; var. *conversaria* from the New Forest; var. *nigra* from Delamere and Rannoch and two very unusual buff-coloured aberrations from Rannoch; a bred series of *Cucullia asteris* from Dolgelly; a series of *Triphaena comes* and its var. *rufa* from Loch Maree also *Noctua castanea* from Rannoch. Mr. W. Mansbridge showed a long and varied series of *Peronea hyemana* Haw. (*mixtana* Hub.) from East Cheshire, including an extreme melanic form, var. *brunnea*, var. *griseana* and pale and dark forms for comparison.

December 16, 1939.—Mr. Mansbridge gave an address entitled Recent Additions to British Lepidopterous Fauna. He exhibited the following species: *Ortholitha umbrifera* Prout which had been mixed with *O. plumbaria* F. in collections, a species it closely resembles; Cheshire examples from Delamere were shown and it was also said to occur at Thurston. *Tinea insectella* Zett. and *Choreutis punctosa* Haw.: These two species had been identified by Mr. F. N. Pierce by examination of the genital armature; so far as yet established the latter species occurs in the southern counties of Dorset, Hants and the Isle of Wight. It is very similar to *C. myllerana* F. and the two have been mixed in collections. Has been bred on *Scutellaria*. *Pyrausta nubilalis* Hubn.: Hitherto of very rare occurrence in Britain, a strong colony has established itself in Essex, where the larva feeds chiefly in the stems of the common mugwort; abroad it is destructive to maize and is known in U.S.A. as the European corn borer. Mr. Snell exhibited a varied series of *Tortrix postvittana* from Newquay. The larva feeds on *Euonymus*; first discovered as new to Britain in 1937. Mr. H. McPherson showed a box of Coleoptera, among which were the following: *Phyllopertha horticola*, including one dark variety from Delamere; *Meloe proscarabaeus* from Erbistock; *M. violaceus* from Cartmell Fell; *Ocupalpus meriotianus* from Crosby and *Oceopoma thoracicum* from Cartmell Fell; the last species is not recorded in Sharp's list. Mr. Driver had amongst his exhibit *Noctua triangulum* taken in Birkenhead, and an unusually large specimen of *Cleora jubata* from the New Forest.—WM. MANSBRIDGE (*Acting Hon. Secretary*).

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—January 4, 1939.—This being the Annual Meeting, the following officers were elected: *President*, H. N. Michaelis; *Vice-President*, H. Kitchin; *Secretary*, R. J. Wigelsworth; *Asst. Secretary*, L. Nathan; *Treasurer*, W. Buckley; *Librarian*, J. E. Cope; *Auditor*, Dr. J. Hope; *Council*, G. S. Kloet, G. J. Kerrich and T. H. Hanson. Mr. H. N. Michaelis gave his Presidential Address, Notes on the Genus *Peronea* Curt. (Lepidoptera Tortricidae), illustrated by a case of specimens, some

with the pupal skins, and a diagram of the neururation of the genus. Mr. H. Britten showed the rare beetle *Sphaerius acaroides* Matth. ex moss, being a new record for the county of Westmorland. Exhibits were also shown by Messrs. T. H. Hanson, G. J. Kerrich and L. Nathan.

February 1, 1939.—Mr. H. Kitchin, Vice-President, in the Chair.—Mr. J. E. Cope brought some books from Mr. S. Garside, a former member, for presentation to the Library, inclusive of Stephens's *Illustrations of British Entomology*. Mr. B. H. Crabtree exhibited aberrations of *Arctia caja* L. bred from the Altrincham district; Mr. H. Britten, "blown" ova of Lepidoptera. Mr. G. J. Kerrich gave his Museum Address, Insect Parasites of Other Insects, illustrated by specimens.

March 1, 1939.—Mr. H. N. Michaelis, President, in the Chair.—Mr. B. H. Crabtree gave an interesting paper on the British Blues (Lepidoptera Lycaenidae), with selected specimens from his collection. Mr. H. Britten exhibited two species of Trypetid Diptera: *Platyparac discoidea* F. and *Tephritis vespertina* Lw. Mr. W. Buckley, a volume on *Pieris napi* L. and *Pieris bryoniae* O., by Dr. L. Müller and Ing. Hans Kautz, Vienna, 1938; Mr. A. de Porochin of Helsinki, some Coleoptera, etc., taken during a visit to England; Mr. H. N. Michaelis, various forms of *Xanthorhoe montanata* Bkh. and *X. fluctuata* L.

April 5, 1939.—Mr. H. N. Michaelis, President, in the Chair.—Mr. J. B. Garnett showed the latest model of the microprojector, with some mounts of Fred Enock's *Fairy Flies*. Slides were also shown by Messrs. H. Britten and H. Kitchin. Mr. G. W. R. Bartindale read a paper on Coleoptera in the Macclesfield District, illustrated by two store-boxes of specimens. Since the autumn of 1932 Mr. Bartindale has taken 852 species within about eight miles of Macclesfield. Mr. T. H. Hanson showed three drawers of life-histories of Lepidoptera from the Baron Bouck collection.—L. NATHAN (*Asst. Hon. Secretary*).

OBITUARY.

KENNETH J. MORTON.

Entomology has suffered a great loss in the death of Mr. Kenneth Morton, who, we have to announce with great regret, passed away on January 29 last at Edinburgh, after an illness lasting only two days. Although in his 82nd year he was in comparatively robust health and active up to the last, so that his sudden end came as a profound shock to his many friends.

Mr. Morton was born at Carluke, Lanarkshire, in May, 1858, and received his education there. At the early age of 16 he entered the British Linen Bank, and was employed at the Glasgow branch, travelling to that city daily from Carluke, rather than be divorced from his beloved countryside. In 1897 he was transferred to Edinburgh as Chief Inspector of the Bank, and was promoted rapidly,

first as Accountant, then as Secretary. Finally he was offered the post of Manager to the Bank but, declining this, retired shortly afterwards in 1922, to devote the remaining years of his life to his hobby, entomology. He was elected a Fellow of the Royal Entomological Society of London in 1893.

Like many other great entomologists he evinced a taste for natural history from his earliest years, and again, like most, his first love was for the Lepidoptera, of which he formed a fine collection of the British species. At the age of 18, however, he began to extend his interests to other orders, which afterwards embraced the Odonata, Trichoptera, Neuroptera, Mecoptera, Plecoptera and the Apoidea of the Hymenoptera. It was, however, his work on the first three of these orders which placed him as one of our foremost entomologists. Both as a field-collector and systematist, his knowledge of the Trichoptera was unrivalled, and his contributions to the literature of this order and the two orders Odonata and Neuroptera ran into well over sixty papers and lengthy notes.

His field-work will be best remembered for his rediscovery of *Macromia splendens* (Pictét), in France, after it had defied all continental collectors for nearly fifty years; for his work on the distribution of *Aeshna caerulea* Ström., *Somatochlora arctica* Van der Lind, and *Coenagrion hastulatum* Charp., in Scotland (all in Odonata), and lastly for the discovery of the two Neuroptera *Megalomus hirtus* (Linn.) and *Drepanepteryx phalaenoides* (Linn.), in Mid Lothian. In addition to his extensive collecting in Scotland, Mr. Morton made numbers of collecting trips to the Continent—France, Spain, Italy, Corsica, Switzerland, Norway and Austria being visited. Valuable papers on the results of these trips and on collections which had been made for him by others in the Near and Middle East were afterwards published, some appearing in this magazine.

Mention must be made of his long associations with the late Robert McLachlan and Dr. Ris; he corresponded with the former for 26 years, and during that time some 750 letters passed between them to testify to their close collaboration. The latter was introduced to him by McLachlan in 1893, and their association lasted until Ris' death in 1931, during which time more than 250 letters dealing with Odonate problems passed between them.

Those who knew him well can testify to his personal charm and warm friendship; he was always ready to give advice, but with a true Scotch caution, was long and deliberate in giving it; every point was studied with meticulous care, so that when the advice was finally given, it could be implicitly relied upon. On the question of nomenclature he was extremely conservative, and thought that many more of the old names ought to have been conserved; he himself preferred to employ these old Selysian names up to the day of his death. With his passing we see the last of an old and illustrious school of British entomologists, whose names will live for ever. Mr. Morton leaves behind a widow, a son and daughter, to whom we desire to extend our deepest sympathy.

F. C. F.

THE ENTOMOLOGIST.

VOL. LXXIII.]

JULY, 1940.

[No. 926

SOME NOTES ON THE CYNIPID GENUS *DIPLOLEPIS*.

BY M. NIBLETT.

I HAVE retained the generic name *Diplolepis* for the species these notes refer to; Prof. Kinsey (1) has made out what appears to be a very good case for their inclusion in the genus *Cynips*, but I feel that I should await the opinions of more competent judges than myself before accepting this.

The European species form a very compact and interesting group of insects, which although known for so many years, still require much work done to clear up numerous points of which we have little or no knowledge. The majority of my observations have been made in the county of Surrey; all localities mentioned are from there unless the contrary is stated.

It might be as well to state here the conditions under which the galls are kept. All galls I keep to breed insects from are placed in glass jars on shelves attached to the walls of an unheated wooden shed the temperature of which, in the colder part of the year, is rarely more than two or three degrees above that prevailing outside.

Diplolepis quercus-folii L.—I first found the galls of this species in 1928 and have found them at Banstead Downs, West Wickham Wood, Park Downs, Limpsfield Chart, Ranmore Common, Epsom Downs, Bookham Common, Burgh Heath, Colley Hill, Arbrook Common, Walton Heath, Effingham Common, Barnthorne Wood, Banks Common, Coldharbour Common, Dunley Hill, Merrow Downs and Ashtead Common; also at Ashdown Forest, Sussex; Brockenhurst and Beaulieu Heath, Hampshire; and Epping Forest, Essex. There is one peculiarity which has been noted before (2), and applies to all the galls of the genus, that is the entire or almost entire disappearance of the galls from the localities where they could be usually found, for varying periods, followed by their reappearance and recurrence for a number of years.

The species under discussion I found from 1928 to 1931; I was then unable to discover a single gall until 1936, when my records for that year from several localities speak of them as fairly plentiful to abundant, and from then until 1939 they have continued so.

The earliest date I have found the galls is July 16, and the latest on leaves still attached to the trees, November 10. I have had the gall-wasp emerge in December, December 2 being the earliest date, but the majority have emerged in January, January 7

and 22 being the earliest and latest dates. I have not had a very high percentage of emergences of *quercus-folii* in the majority of cases, but from 46 galls collected on September 24 I had 23 gall-wasps emerge in January, 75 synergi from May 7 to June 14, and 22 Chalcids from May 7 to 27. I have never found the gall of this species on any other oak than *Quercus robur* L. (*pedunculata*), although I have searched for it repeatedly in woods composed entirely of *Q. sessiliflora* Salb., and in woods where both varieties grew intermingled it appeared always to be confined to the trees of the pedunculate variety.

The insects that I have bred have varied somewhat in colour and in size, the majority being dark brown to brownish black, while several were quite black; as regards size, one bred was about half the average size, the remainder varying slightly, one specimen was also bred devoid of wings, the bases of the four wings being just visible; the wings of all the other insects bred were proportionate to the body-length.

D. taschenbergi Schl.—The galls of this, the alternate sexual generation of the last species, I have not met with in many localities, Limpsfield Chart, Epsom Common, Barnthorne Wood, Arbrook Common and Bookham Common being the only ones.

I first found it in 1930 and again in 1933, and not again until 1937, but from then until 1939 I found it quite plentiful; April 23 to May 29 are the dates when galls containing the insect have been found; on the latter date they were plentiful and I could find none with emergence holes; from 42 galls taken on that date 14 *taschenbergi* emerged from May 31 to June 17, followed by 17 synergi between June 17 and 20; all previous emergences of this species have been from May 5 to 28.

It has frequently been stated that the galls of this species are to be found on the adventitious buds low down on the trunks of the trees; my experience is that they may be found at any height on the trunk if the suitable buds are there. *Q. robur* is the only oak I have up to the present found these galls on.

I have found practically no variation amongst the insects I have bred beyond a slight difference in size and possibly a very small variation in the colour of the legs. Males and females have emerged in about equal numbers.

D. longiventris Htg.—I first found the gall in 1925, and then in fair numbers until 1932; it was not until 1936 that they appeared again and I have found a number each year since. This species again I have only found on the pedunculate oak at Banstead Downs, Ranmore Common, Limpsfield Chart, Epsom Common, Riddlesdown, Park Downs, Colley Hill, Epsom Downs, Bookham Common, Burgh Heath, Arbrook Common, Walton Heath, Effingham

Common, Barnthorne Wood, Banks Common, Dunley Hill, Cold-harbour Common, Merrow Downs and Ashtead Common; also Ashdown Forest, Sussex, and Brockenhurst, Hants.

The earliest date on which I have found the galls is June 10 when they were just distinguishable, while October 25 is the latest I have found them on the trees. Many of the galls I have found have been the typical banded type, but many have had the coloured bands entirely absent, the whole gall being one colour, this varying from cream to light reddish.

The percentage of emergences of *longiventris* from galls I have kept has not been high; I have had them emerge in November, December, January and March, and upon one occasion a delayed emergence, two specimens of *longiventris* emerging on December 14, 1930, from galls collected on July 27, 1929; three *longiventris* had previously emerged from galls of this series in January, 1930.

The insects bred were all dark, several being entirely black; there was very little difference in size except in one instance, when a very small but quite proportionate *longiventris* emerged in December with two normal insects.

D. similis Adler.—Galls of this species I have found on *Q. robur* on two occasions only, at Barnthorne Wood on April 24, 1937, when *similis* emerged May 5, 1937; on April 23, 1938, they were more plentiful; several had emergence holes in them, but from those collected the gall-wasp emerged on April 30, 1938, and May 10, 1938. The galls were situated on the trunks of the trees at varying heights up to 6 ft. from the ground level; they were not very easy to distinguish, particularly as they were intermingled with galls of *D. taschenbergi*, but the distinctly greenish-grey tinge made it impossible to mistake them for that species. I have spent much time searching for this gall in other localities where its alternate *longiventris* had occurred, but without success.

There seems to be practically no variation among the insects I have bred and males and females have emerged in about equal numbers.

D. divisa Htg.—This gall I first found in 1925, and then in fair numbers up to 1931. I found several in 1932, none in 1933, five in 1934, none again in 1935, a few in 1936, but from 1937 onwards I have found it in considerable numbers.

On *Q. robur* it has occurred at Banstead Downs, Bookham Common, Park Downs, Epsom Common, Burgh Heath, Arbrook Common, Walton Heath, Esher Common, Epsom Downs, Effingham Common, Barnthorne Wood, Banks Common, Oxshott Heath, Limpsfield Chart, Albury Downs, Riddlesdown and Merrow Downs; also at Brockenhurst, Hants. On *Q. sessiliflora* at Friday Street, Croham Hurst and Banstead Wood.

The gall-wasps of this species that I have bred have emerged from October 10 to January 16, a few synergi in August of first year, and numerous Chalcids from August to the following May have also emerged. The earliest date on which I have observed these galls is June 26, and the latest October 25.

The insects bred show little difference in colour; some were slightly darker than the average, but one insect was noticeably so, being very dark; others from the same series of galls were about the average colour.

D. verrucosa Schlct.—This species, the alternate sexual generation of *divisa*, has one of the most elusive galls I know; I found one gall on June 19 at Woodmansterne, again three were found at Limpsfield Chart on May 21, 1927, one of which had the appearance of being a bud gall. Although I searched persistently in areas where the alternate species had occurred I failed until May 6, 1939, to find it. On that date at Oxshott Heath 15 galls were found; five of these had emergence holes in them, but from the remaining ten I succeeded in breeding out nine *verrucosa* between May 14 and 17. I considered myself very fortunate in finding these *verrucosa* galls, as the area adjoining the trees on which they occurred had been burnt earlier in the year, probably at Easter, and it was on this area that *divisa* had been very plentiful in the previous autumn. All the galls found were on *Q. robur*.

The first-mentioned galls I found agreed with published descriptions, but those found in 1939 were quite unlike them, being yellowish brown, the surface being finely granular all over, and quite free from the watery vesicles which are usually a feature of these galls; there was some slight variation in size and shape, but they averaged near to the descriptions. The dark-coloured *divisa* previously mentioned was bred from a gall from the same area. The insects bred consisted of three males and six females.

D. agama Htg.—Although I have found a number of galls which I had fondly hoped would prove to be this species, investigation proved them to be only *divisa* galls, and I have yet to find a gall which I can confidently claim to be that of *agama*.

D. disticha Htg.—My first acquaintance with the gall of this species was in 1926. In 1928, 1929, 1930 and 1931 I found them plentiful, in 1932 very few were found, and then none until 1936, since when they have not occurred in anything like the numbers they did from 1928 to 1931.

I have found these galls on *Q. sessiliflora* only, at Croham Hurst, Friday Street, Addington, Limpsfield Chart, East Horsley, Banstead Wood and Worms Heath; also at Brockenhurst, Hants. The earliest date they were found was July 5, and the latest November 9.

The gall-wasp I have had emerge from October 15 to November 20, the majority coming out in November. Synergi have emerged in August and September of first year, and in May and July of second, with Chalcids in April and May of second year.

Again, as with most species of this genus, emergences of the gall-wasp have been small compared with the number of mature galls collected; many of them when cut open showed a larval chamber entirely devoid of contents, this referring to galls from which no insects emerged. The insects bred appear to agree in colour with published descriptions, but varied somewhat in size.

Kinsey refers to *folii* var. *atrifolii* from two localities in Denmark, also to intermediate forms between *folii* and *atrifolii*; to *longiventris* var. *forsiusi* from Finland and Denmark, with intermediate forms; and to *divisa* var. *atrividisa* from Denmark and France with hybrids from Denmark, Finland and France.

These varieties are apparently quite distinct from the typical mid-European species, but the galls as far as is known appear to be identical with those of the more southern ones; the insects all emerge earlier. No galls or insects of the alternate sexual generations have at present been discovered, but in all probability they exist.

These insects are in each case smaller than the mid-European species and the colour is different, black predominating. Among the insects belonging to this genus that I have bred there have been some smaller and darker than the average, also darker insects of normal size; it may prove that we have in this country intermediate forms between these northern varieties and the southern ones. It is to be hoped that further investigations in Britain, especially in connection with the galls and insects of this genus from oaks in the more northerly parts of the country, may reveal some connecting link, or even pure strains of the northern varieties.

REFERENCES.

- (1) KINSEY, ALFRED C.—(1930) *The Gall Wasp Genus Cynips*.
- (2) NIBLETT, M. (1936-37).—*Proc. South London Ent. and Nat. Hist. Soc.*
10, Greenway,
Wallington,
Surrey.

FIRST APPEARANCES, 1940.—Owing to the very backward spring this year, dates of first appearances were later than usual. In the Sevenoaks district, however, *Aglais urticae* was first observed on the wing on March 3, *Gonepteryx rhamni* on March 12, whilst *Vanessa atalanta* was noted on April 17. Since that date several specimens of this insect have been seen here. *Pieris brassicae* was flying on April 22.—WILLIAM E. BUSBRIDGE; "Gresham," Bradbourne Park Road, Sevenoaks.

NEW RECORDS FOR IRISH LEPIDOPTERA.

BY ARTHUR A. LISNEY, M.A., M.D., F.R.E.S.

(Continued from p. 128.)

GEOMETRIDAE.

Scopula immutata L.—WX : Wexford, one 11.vii.1928.*Cosymbia punctaria* L.—KD : Athy, a larva beaten from oak 10.ix.1937 and imago bred. WI : Powerscourt, three larvae beaten from oak 3.ix.1937 and two imagines bred. This rare species has only been recorded previously for Cos. Cork and Galway.*C. pendularia* Clerck.—KD : Athy, a larva on birch 21.ix.1938. A very local species which has apparently not been recorded previously for this county.*Larentia clavaria* Haw. (*cervinata* Schiff.).—WI : Bray, abundant during September. DU : Monkstown, one 13.ix.1937 ; Shankill, single specimens 16.ix.1936 and 6.ix.1937. A scarce and very local species in Ireland.*Odezia atrata* L.—WI : King's River Valley, not uncommon. DU : Whitechurch, scarce. First record for Co. Wicklow.*Anaitis plagiata* L.—WI : Woodenbridge. DU : Shankill. I have submitted my specimens to F. N. Peirce, but he failed to identify *A. efformata* Guenée amongst them.*Calocalpe undulata* L.—QC : Maryborough, a larva on willow 16.x.1927. Imago bred.*Lygris prunata* L.—DU : Shankill, a single specimen dusking 7.ix.1929.*Cidaria fulvata* Forst.—DU : Shankill, one 18.vii.1931 ; Whitechurch, one 24.vi.1925.*Chloroclysta siterata* Hufn.—WI : Glencree, one 8.ix.1937. DU : Ballycorus, one 28.ix.1937 ; Shankill, one 28.ix.1937.*C. miata* L.—WI : Glencree, one 8.ix.1937. DU : Ballycorus, one 16.iv.1927 ; Shankill, one 20.xi.1928.*Thera firmata* Hübn.—WI : Kilruddery, one 6.ix.1937 ; Powerscourt, one 4.ix.1937. First records for Co. Wicklow, but recorded previously for Co. Dublin.*Oporinia autumnata* Borkh.—WI : Glencree, one at rest on heather 8.ix.1937. First record for Co. Wicklow, or indeed for the south of Ireland.*Epirrhoe tristata* L.—DU : Whitechurch, three 30.v.1924. First record for the county.*Coenotephria derivata* Schiff. (*nigrofasciaria* Göze).—DU : Ballycorus, scarce ; Shankill, one 12.v.1929 and two 23.iv.1931. MO : Carrickmacross, one 17.v.1929.

Eupithecia dodoneata Guen.—DU : Shankill, single specimens 19.v.1927 and 20.v.1927. A scarce species in Ireland.

Orthonama lignata Hübn. (*vittata* Borkh. *nec* Thun.).—WI : The Murrrough, one 13.ix.1937.

Deuteronomos alniaria L.—WI : Delgany, four 16.ix.1936 ; Powerscourt, one 8.ix.1937. DU : Shankill, two 15.ix.1936, three 23.ix.1936 ; Whitechurch, one 16.x.1924. Donovan records this species as scarce in Ireland.

Pseudopanthera macularia L.—WI : Aghrim, common 28.v.1928 ; Rathdrum, several 4.vi.1927.

Semiothisa liturata Clerck.—WI : Lough Dan, one 26.vi.1927. A scarce species in Ireland.

Theria rupicaprararia Schiff.—DU : Shankill, single specimens 8.ii.1929 and 26.ii.1930.

Phigalia pedaria Fabr.—DU : Whitechurch, not uncommon. A scarce species in Ireland.

Biston strataria Hufn.—DU : Whitechurch, a larva beaten from oak early in May, 1923, which pupated 23.vi.1923. Unfortunately the imago which emerged the following April was deformed. A second larva was beaten at the same time by a friend but he failed to rear it. First record of this species for Co. Dublin.

B. betularia L.—DU : Shankill, common. Two of three larvae found in the garden on rose 26.ix.1938 produced a pair of ab. *doubledayaria* Mill, while the imago from the third was of the typical form. This is only the third record of ab. *doubledayaria* for Ireland ; it has been captured previously in Co. Down and bred in Co. Louth. The typical form is common and widely distributed (Donovan).

Itame wauaria L.—DU : Shankill, two 17.vii.1926 and one 15.vii.1928.

Lithina chlorosata Scop. (*petraria* Hübn.).—DU : Ballycorus, common.

COSSIDAE.

Cossus cossus L.—WI : The Murrrough, two larvae in willow and a ♂ at rest on herbage 7.vii.1928 ; Rathdrum, empty pupa cases projecting from pine stumps ; Woodenbridge, willow stumps riddled with larval borings. Mr. A. W. Stelfox found a full-grown larva near one of these stumps in the autumn of 1925. In all these localities this species is probably common. Donovan records it as scarce and distributed sporadically over the southern half of Ireland.

HEPIALIDAE.

Hepialus lupulina L.—DU : Shankill, single specimens 17.v.1926 and 26.vi.1928.

PHYCITIDAE.

Ephestia elutella Hübn.—DU : Shankill.

GALLERIADAE.

Meliphora grisella Fabr.—DU : Shankill, common.

Aphomia sociella L.—DU : Shankill, common.

CRAMBIDAE.

Crambus pratellus L.—DU : Shankill.

C. culmellus L.—WI : Newtown Mt. Kennedy. DU : Old Connaught and Shankill.

C. hortuellus Hübn.—DU : Shankill.

C. tristellus Fabr.—WI : Tinahely.

PYRAUSTIDAE.

Hydrocampa nymphaeata L.—WI : Tinahely.

Notarcha ruralis Scop.—DU : Whitechurch.

Phlyctaenia lutealis Hübn.—DU : Old Connaught and Shankill.

P. ferrugalis Hübn.—DU : Terenure.

P. fuscalis Schiff.—WI : The Devil's Glen.

Nomophila noctuella Schiff.—WI : Ennereilly.

Pyrausta purpuralis L.—DU : Shankill.

P. olivalis Schiff.—DU : Shankill.

Scoparia resinea Haw.—WI : Newtown Mt. Kennedy.

S. crataegella Hübn.—WI : Newtown Mt. Kennedy. DU : Shankill.

S. cembrae Haw.—DU : Shankill.

S. dubitalis Hübn.—WI : Rathdrum. First record for Co. Wicklow.

S. ambigua Treits.—WI : Rathdrum. DU : Terenure.

Mesographe forficalis L.—DU : Shankill.

PYRALIDIDAE.

Pyralis farinalis L.—DU : Dublin.

Aglossa pingualis L.—DU : Shankill.

PTEROPHORIDAE.

Platyptilia gonodactyla Schiff.—WI : Bray. DU : Shankill, common.

Alucita pentadactyla L.—WI : Tinahely. DU : Shankill.

Stenoptilia bipunctidactyla Haw.—WI : The Murrough. DU : Shankill.

TORTRICIDAE.

- Cacoecia podana* Scop.—DU : Shankill.
C. rosana L.—DU : Shankill and Terenure.
Tortrix musculana Hübn.—DU : Shankill.
Tortricodes tortricella Hübn.—WI : Ballyhenry. First record for Co. Wicklow.
Cnephasia conspersana Dougl.—DU : Shankill.
Argyrotoxa bergmanniana L.—DU : Shankill.
Peronea schalleriana L.—DU : Shankill. My specimen is referable to *P. perplexana* Barr., which is now considered a variety and not a separate species.
P. variegana Schiff.—DU : Shankill.

EUCOSMIDAE.

- Ancylis lundana* Fabr.—DU : Shankill.
Notocelia roborana Treits.—DU : Shankill.
Eucosma trimaculana Don.—DU : Terenure.
E. cana Haw.—DU : Shankill.
E. tripunctana Fabr.—DU : Shankill.
Argyroproctoe schulziana Fabr.—WI : Djouce and Lugnaquilla mountains.
A. lacunana Dup.—DU : Shankill and Terenure.
Pammene regiana Zell.—DU : Shankill.
Laspeyresia perlepidana Haw.—DU : Shankill.

OECOPHORIDAE.

- Dasycera sulphurella* Fabr.—DU : Shankill.
Endrosis lactella Schiff.—DU : Shankill.
Borkhausenia fuscescens Haw.—DU : Shankill.
B. pseudospretella Staint.—DU : Shankill.
Chimabache fagella Fabr.—WI : Powerscourt and Woodenbridge.
Carcina quercana Fabr.—DU : Shankill.
Depressaria herachiana De Geer.—DU : Shankill.
D. costosa Haw.—DU : Shankill.
D. applana Fabr.—DU : Shankill.

ORNEODIDAE.

- Orneodes hexadactyla* L.—DU : Shankill, frequent.

GLYPHIPTERYGIDAE.

- Simaethis fabriciana* L.—DU : Shankill.

ELACHISTIDAE.

Elachista subnigrella Dougl.—DU : Shankill.

E. nigrella Haw.—DU : Shankill.

E. rufocinerea Haw.—DU : Shankill.

E. cygnipennella Hübner.—DU : Shankill.

HYPONOMEUTIDAE.

Argyresthia goedartella L.—DU : Shankill. First record for Co. Dublin.

Swammerdamia pyrella Vill.—DU : Shankill.

Prays curtisellus Don.—DU : Shankill.

COLEOPHORIDAE.

Coleophora glaucicolella Wood.—WI : Ballyhenry Marsh. Only two previous records for Ireland—Seapoint, Co. Dublin, and Killarney, Co. Kerry (Beirne).

GRACILARIADAE.

Lithocolletis faginella Zell.—DU : Shankill. First record for Co. Dublin.

L. nigrescentella Logan (*bremiella* Frey).—DU : Shankill.

Gracilaria syringella Fabr.—DU : Shankill.

G. tringipennella Zell.—DU : Shankill.

EPERMENIADAE.

Epermenia chaerophylllella Göze.—DU : Shankill.

PLUTELLIDAE.

Cerostoma vittella L.—DU : Whitechurch.

Plutella maculipennis Curt.—DU : Shankill and Terenure.

LYONETIADAE.

Leucoptera laburnella Staint.—DU : Shankill, common and double-brooded.

Lyonetia clerkella L.—DU : Shankill.

Bucculatrix nigricornella Zell.—DU : Shankill. Not recorded previously for Co. Dublin.

TINEIDAE.

Monopis rusticella Hübner.—DU : Shankill.

Tinea cloacella Haw.—DU : Shankill.

T. lepella Hübner.—DU : Shankill.

LAMPRONIADAE.

Incurvaria muscalella Fabr.—DU : Shankill.

Lampronia rubiella Bjerk.—DU : Shankill.

Mnesipatris filicivora Meyr.—This interesting species was first recorded from Seapoint, Co. Dublin, where it was found commonly (Beirne). Distribution is limited to an area about eight miles square in the southern half of the county and I have found *M. filicivora* commonly in gardens at Shankill. I have also found the species in a garden at Enniskerry which is the first record for Co. Wicklow.

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CORRECTION.—P. 125, for *cristatula* read *confusalis*.

The Red House,
Narborough,
Leicestershire;
February, 1940.

EUCHLOË CARDAMINES IN MARCH.—Major H. Chavassee informs me he saw a male *E. cardamines* on the wing on March 4 last (the first one seen) in Skibbereen, Co. Cork.—F. W. FROHAWK ; April, 1940.

VANESSA CARDUI IN EARLY MARCH.—As it is very unusual for *V. cardui* to appear during the winter in Britain, the following very interesting observation made by Major H. Chavassee at Skibbereen, Co. Cork, is worthy of record. In reply to my inquiry as to the actual date when he saw the butterflies, he stated in his letter, dated March 11, 1940 : "I looked up my diary and I find I was sitting in a friend's garden on March 4. It was a lovely day, sunny and calm, when I saw three specimens of *V. cardui* hovering over some flowers and occasionally flirting. As a matter of fact I had seen a couple of them two or three days before in my own garden, but I failed to write down the date." He also says he has seen no Tortoiseshells. As it appears very early for flowers to be blooming on March 4, I inquired what they were, especially as he said they did not escape the Arctic spell, having registered 18° F. In reply he kindly sent me a plant he had seen the *cardui* hovering over, which I found was Virginia Stock in full bloom. He further states that it is a very sheltered garden, and being in the Gulf Stream, very early sub-tropical plants grow freely there.—F. W. FROHAWK ; April, 1940.

OBSERVATIONS ON *LASIOCAMPA QUERCUS*, WITH
SPECIAL REFERENCE TO PUPATION.

BY LEONARD G. HULLS, F.R.E.S.

Lasiocampa quercus is an extremely interesting and accommodating insect. Numbers of the larvae are available in the autumn, and, kept indoors during the winter, their development can be largely controlled by conditions of temperature and food supply. Kept reasonably warm and supplied with food, they remain active and grow fairly rapidly, whilst under cooler conditions and deprived of food, they contentedly indulge in periods of diapause. They will eat almost any kind of vegetation, and those now under consideration were reared on privet. During the very severe weather of last winter, when the temperature outside was 20° F., and the quiet of the evening was disturbed by the crashing of ice-laden boughs, the sight of a cage full of actively feeding *L. quercus* larvae afforded no little consolation. Against all the points in favour of keeping these larvae for observation and experiment, there must be set one of weighty opposition. The fact that the observations herein described were seriously impeded for a fortnight during which the writer was deprived of the use of one eye, casts very grave suspicion on the insect. It was not until the trouble had started that it was thought of interest to examine the fingers after handling the larvae, especially those about to pupate. It required but little imagination to realize what might happen if such fingers were rubbed into an eye. There is, of course, no absolute proof that *L. quercus* was the culprit, but the insect will always be considered responsible for providing the writer with many hours of agonizing pain, and several weeks of discomfort.

Pupation and loss of weight involved.—On previous occasions detailed observations were made on the pupation of *Acherontia atropos* and *Sphinx ligustri*, with special reference to the weight changes which occur during the process (*Entom.*, 1938, 71, and 1939, 72). As both these larvae normally pupate underground in an earthen cocoon, it was felt that *L. quercus*, which constructs a silken cocoon above ground, might yield results of a very different character. The pupation curve for the insect is shown in Fig. 1, which also includes insets of the corresponding curves for *A. atropos* and *S. ligustri*. It will be seen that a great similarity exists between the three, and that despite its difference of behaviour at the time, *L. quercus*, during pupation, follows closely on the lines of *atropos* and *ligustri* in so far as weight change is concerned. In the case of the latter two insects, it was discovered that the loss of weight commenced

whilst the larvae were still feeding, this state of affairs usually lasting for one, and sometimes two days. *L. quercus* exhibits this condition over a period of five days, but on the third day after maximum weight is attained there is a slight gain in weight. This was noticed in the case of all larvae examined. When they cease feeding, the larvae of many Lepidoptera go through a period of wandering, during which weight is lost very rapidly. In the cage one sees such larvae wandering ceaselessly round and round, climbing the sides of the cage and falling down only to start going round again. *L. quercus* shows little inclination to behave in this manner, remaining quiescent most of the time until spinning is about to commence.

The cocoon is completed in about 48 hours, and, from the graph, it will be seen that during this period there is no violent change in the slope of the curve. The loss of weight continues steadily and fairly regularly. This graph was drawn from weighings made every 24 hours, and the question arose as to what might be revealed by more frequent weighings during the period of cocoon construction. A number of small metal gauze cylinders were made and carefully tared. Into each, in due course, was placed a larva on the point of spinning. Hourly weighings were made over long periods, and it soon became evident that the loss of weight was by no means as regular as had appeared from the daily weighings. It was found that not only did the rate of loss vary according to the amount of work done by the larva (as might be expected), but that it varied in relation to the particular part of the process on which it was engaged. It is convenient to divide the construction of the cocoon into three stages :

- (1) The spinning of anchoring threads and construction of a general framework.
- (2) The construction of the outer covering of the cocoon.
- (3) The lining process.

During the first two stages it is possible to observe the larva, and variations in the rate of loss of weight are found to coincide with the amount of work done. Thus, during a spell of active spinning the rate is greater than during a period of rest. At this stage a large proportion of the loss is probably due to the drying out of the silk, and it is, therefore, greater during bursts of spinning. It is not until the larva has completed stage 2 and become completely hidden from view that anything remarkable occurs. At this point, or very soon after it, the rate of loss becomes much greater, as will be seen by reference to the graph in Fig. 2. This graph was made from hourly weighings which commence at a point A, some five hours before the larva had become completely enclosed. The sudden increase in the rate of loss which commences at B

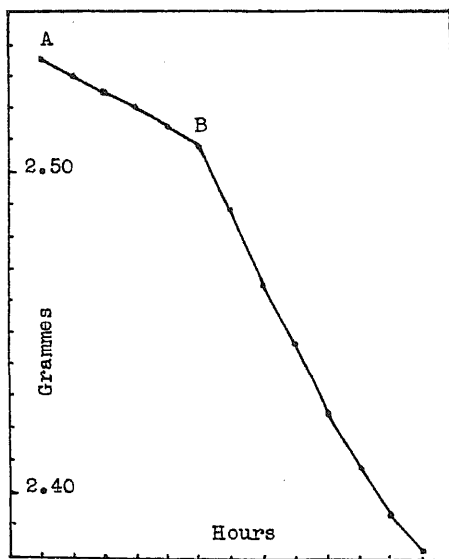
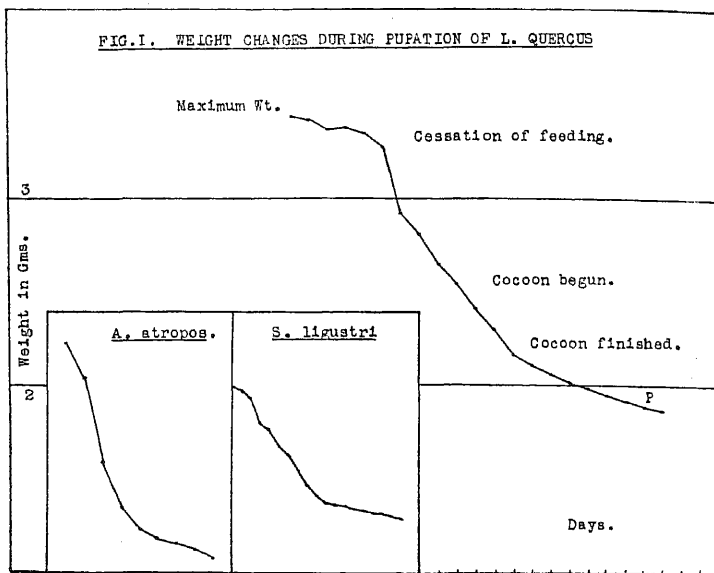


Fig.2. Weight changes during cocoon construction.

most probably indicates the use of cementing fluid by the larva. This rate, as a rule, is maintained for about eight hours, and it seems likely that the point where it becomes greatly diminished marks the final completion of the cocoon. The following experiments on the cocoon will be found to throw further light on the matter.

The cocoon.—If an empty cocoon is boiled for a few minutes in water, it becomes easily possible to separate it into a brown outer shell composed of silk, hairs and cementing substance, and an inner lining of pure white silk. The natural conclusion is that the silk lining is glued to the outer shell. With a view to obtaining further enlightenment, a cocoon was taken at the moment of the completion of the outer covering, i.e. at the end of stage 2. Three small holes were cut in it, and these were kept under constant observation. After an hour the larva was seen to cover the first hole with a white silk web, and shortly afterwards both the other holes were similarly treated. Within the next few hours the three holes were further sealed by being daubed over with what appeared to be a pale buff-coloured liquid of a viscous nature. This liquid spread over the silk threads, filling up the interstices, setting and drying immediately. These results tended to confirm the theory of the gluing on of an inner lining to the cocoon, but it was felt that more might be done to obtain some actual proof. The next experiment to suggest itself was that of cutting open cocoons at different stages, and noting the condition of the insides. Although the results of this second experiment did not provide the desired proof, they are, nevertheless, of considerable interest. Another cocoon was taken at the moment of completion of stage 2; it was opened carefully and the somewhat shrunken larva removed to a small pillbox. Examination of the cocoon revealed no trace of the inner silk lining. The course of the experiment was entirely changed by the discovery, 24 hours later, that the larva had spun another cocoon of a pale buff colour, and composed mainly of silk which was stiffened by a small amount of cementing fluid. This was opened and the larva again removed to the small box. After 24 hours it was found that it had spun yet another cocoon, this time an extremely thin one of pure white silk. Once again the larva was removed, but by this time it had come to the end of its resources, and could now only manage to produce a few silk threads, beneath which scanty covering it finally pupated. It is possible that the second cocoon was really the lining which should have been glued inside the first, and that the third one was a second attempt to produce such a lining. It seems obvious that the supply of silk outlasts that of cementing fluid.

The permeability of the cocoon.—Having noted something of the

nature of the cocoon, one is led to wonder how it is that an insect, closely sealed up in such a case, can expel its carbon dioxide and surplus moisture, and readily obtain a supply of oxygen. From the moment it has completed the cocoon the larva continues to lose weight steadily, as of course it must do, and after pupation, the pupa also carries on the process of reducing its moisture content. It is an easy matter to keep track of this loss by continually weighing the cocoon. Although one knows that the loss of weight continues right up to the time of emergence, it might be argued that this was caused by a drying out of the material of the cocoon. It was therefore considered necessary to disprove this by separating the insect from a cocoon, subsequently keeping both regularly weighed. As was to be expected, the result proved that the loss came from the insect and not the cocoon. With a view to obtaining some idea of the permeability of the cocoon, the following experiments were carried out. The end of a cocoon was carefully cut off, and, after removal of the pupa and discarded larval skin, the remainder was sealed on to the end of a glass tube. An airtight joint was obtained by the use of adhesive tape and sealing-wax. The tube was then connected to a U tube into which mercury was poured. It was found that a column of mercury 4-5 in. in height could be supported for several minutes, during which time the air was slowly forced out through the cocoon. Next some dry powdered methylene blue was poured down the tube into the cocoon, which was then suspended in a beaker of water. After twelve hours there was no sign of blue colour in the water. Water was then added to the methylene blue in the cocoon, and it was clamped with its end resting on a white filter-paper. After twelve hours there was no blue stain on the paper. The cocoon containing the blue solution was then suspended in water, and after ten hours the first sign of blue colour appeared outside the cocoon. These experiments would seem to indicate that the material of the cocoon is to all intents and purposes waterproof, and that air can be slowly forced through it at a pressure slightly above that of the atmosphere.

On the opposite page are some of the figures obtained during these experiments.

In the writer's study there hangs a portrait of Réaumur. It is a photograph of the bust by Le Moyne, and represents the old naturalist with a smile on his face. At times this smile appears to become slightly cynical as the master gazes down, amused to watch the efforts of a mere tyro. One is compelled to turn to the *Memoires*, and there, in vol. i, discover a long and detailed account of the formation of the cocoon of *L. quercus*. Réaumur seems to find it difficult to understand how so large a larva can be contained in so small a cocoon. Had he used his balance (and he certainly had

Daily Weight of Larva during Pupation.

gm.	gm.	gm.
3.45 Maximum wt.	2.81	2.06
3.42	2.65	2.02
3.37	2.55	Spinning begun. 1.99
3.38	2.41	1.95
3.35	2.30	1.92
3.26 Feeding ceased.	2.17 Cocoon finished.	1.89 Pupation.
2.92	2.11	1.87

Weight of cocoon	. 0.19 gm.
Weight of pupa	. 1.61 „
Loss of weight	. 53.3%

Hourly Weighings during Cocoon Construction. (See Fig. 2.)

gm.	gm.
2.536 . . .	2.465
2.531 . . .	2.448
2.525 . . .	2.425
2.520 . . .	2.409
2.514 . . .	2.393
2.508 . . .	2.378
2.487 . . .	2.365

In the case of the larva which constructed three cocoons the weights were as follows :

	Cocoon.	Larva.
1.	0.12 gm. . .	2.22 gm.
2.	0.02 „ . .	2.09 „
3.	0.01 „ . .	2.01 „

one), he would have found that by the time the larva is enclosed in the cocoon it has lost more than a quarter of its weight, and is, therefore, much reduced in bulk. Réaumur, too, suffered severely from the effect of getting larval hairs into his eye, and seems to have derived comfort from the fact that he had thereby made a scientific discovery. It has to be confessed that knowledge of this afforded the tyro some slight consolation during his hours of pain.

Rax,
Chidham,
nr. Chichester.

NYPHALIS ANTIOPA AT HENDON.—I had the extreme pleasure of seeing a *N. antiopa* fly into a garage yard at Hendon this morning at about 11.15 B.S.T.—NORMAN A. RICHARDSON; 68, Finchley Lane, Hendon, April 23, 1940.

NOTES ON ORIENTAL THECLINAE: A CORRECTION.

BY N. D. RILEY.

IN some recently published notes on various Oriental species of *Thecla* (1939, Nov. Zool., 41 : 355) I gave it as my opinion that *Thecla cognata* Staudinger (1892) was the same as *Thecla ultramarina* Fixsen (1887), basing this upon the fact that I was quite unable to distinguish them by any external features. I further considered that *T. jezoensis* Matsumura (1926) and *T. jozanus* Matsumura (1915) were a subspecies and a female form respectively of this same species.

Shortly afterwards M. Stempffer of Paris sent me a number of these very attractive metallic green hairstreaks for examination, all of which he had received from Japan. He pointed out that amongst these were two males which had been supplied to him as *jezoensis*, and two as *jozanus*, and that the genitalia of these showed constant differences. Dissection of the small series of eight Japanese males in the British Museum confirmed these differences; eleven males from Amur and Corea, and two from Yunnan, all of which had been referred to *ultramarina*, were also dissected and showed similar differences in the genitalia.

The differences in the genitalia are considerable, and confusion between the two is impossible. No sign of intermediate conditions was observed. The most obvious character is the shape of the distal half of the clasp, which is shown in the figure. In *ultramarina* the main teeth lie, as it were, at either end of a shallow depression, those in between being much less prominent; in *cognata* there is a strong double apical tooth; the other teeth are quite secondary in importance and the wide depression is lacking. The cornuti of the vesica, as will be seen from the figure, also differ greatly.

With such definite anatomical differences as these one would expect to be able to correlate differences in colour or pattern. One can say that *cognata* has a more rounded apex to the fore wing than *ultramarina*, and that it is on the whole browner (less grey) on the underside in both sexes and on the upperside in the female. But these features are by no means constant or easily appreciated and can only be used as guides. The only constant difference I can find is in the coloration of the antenna. In both species the club is black, with an orange tip. In *cognata* this orange colour is confined to the last two or three segments; in *ultramarina* it extends on the underside (sometimes slightly darkened) as a broad tapering stripe the whole length of the club and even on to the

shaft. The type-specimen of *ultramarina*, a male which was not dissected, shows this feature very well.

Both *ultramarina* and *cognata* occur in Hokkaido and in Honshiu in Japan. Specimens in the British Museum determined some years ago by Prof. Matsumura indicate that *jozanus* is the *cognata* form and *jezoensis* the *ultramarina* form. Since Japanese specimens are fairly readily separable from those of the mainland,

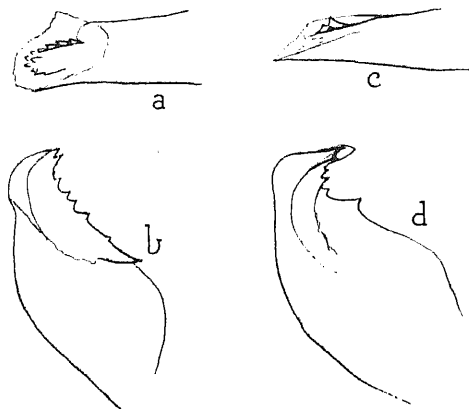


FIG. 1.—Male genitalia of *Thecla*. a, Tip of aedeagus showing cornuti; b, clasp of *Thecla ultramarina jezoensis* Matsumura; c, d, the same of *Thecla cognata jozanus* Matsumura.

these names are available for the Japanese subspecies. *T. cognata cognata* I have seen from the province of Amur, from the Ussuri River district and from Manchuria and Korea; of *T. ultramarina ultramarina* only the unique type, from Korea, has been seen. The evidence of the occurrence of both species in Yunnan rests on dissections of a single male of each from Tsekou. These differ markedly in their external features also from all the other specimens, but in view of the very great distance separating this locality from all the others it seems inadvisable to define a new geographical race upon the basis of these two unique males alone.

NOTES AND OBSERVATIONS.

THE INSECT HOUSE AT THE ZOO.—The Zoological Society, in pursuance of its policy of keeping the amenities of the Gardens available to the public as fully as possible during the war, in spite of operating at a serious loss, has now reopened the Insect House, which was closed on the outbreak of hostilities. This involves an

additional burden of approximately £250 per annum, but the Council felt that the educational value of an insect collection warranted this.

In regard to the larger animals in the Zoo, an Adoption Scheme is now in operation, by which the cost of feeding a particular animal is defrayed by a well-wisher, and material help has been obtained in this way. This would clearly be impracticable with insects, and it is accordingly suggested that entomologists might be interested in helping to "adopt" the Insect House as a whole. One well-wisher has already given £25 for this purpose.

Anyone interested in helping further with this scheme should send contributions to me at the British Museum (Natural History), Cromwell Road, London, S.W. 7. I shall be pleased to transmit them to the Zoo authorities and to give any further information I can on inquiry.—N. D. RILEY.

LIBERATED BUTTERFLIES (*Entom.*, 73 : 116).—After reading Mr. C. I. Paton's remarks on this subject in the May *Entomologist*, I feel impelled to make a plea for a little logic, a little common sense and a little sense of proportion. Mr. Paton takes it for granted that local lists are of more consequence than the spread of beautiful and perfectly harmless butterflies. I feel sure that 999 out of every 1000 people and certainly 99 out of every 100 entomologists would entirely disagree with him. He seems to be the successor of the vandal who destroyed the Monmouthshire colony of the beautiful and very interesting *Araschnia levana*. Had the caterpillar been destructive to my garden produce it might have been excusable, but it feeds on the common (too common) stinging-nettle. The ground on which Mr. Paton founds his view is that the species in question is not a native of the locality. How does he know? He doesn't and he can't. He may know, or at least have good reason for supposing, that it has not been taken there for, say, the last hundred years, but the study of entomology is very modern, and it may well have existed there in past times. Insects do become extinct in localities where they have existed, witness *Melitaea cinxia* and *Cyaniris semiargus*, and they spread equally unaccountably into new districts. Presumably if Mr. Paton had met with *Polygonia c-album* in Sussex some 30 or even 20 years ago he would have concluded that it had been introduced and thought it necessary to destroy it, whereas now it is a frequent visitor to our gardens, sometimes in considerable numbers. If a species is introduced into a fresh locality it will die out if the locality is unsuitable; if it succeeds in establishing itself there, it is quite as likely as not that it is merely taking up again old quarters. Why, again, should the rule only apply to butterflies? Mr. Paton would certainly be a national benefactor if he would destroy all rats, black or brown, both having been introduced by human agency, however unwittingly, but he might find himself in trouble if he tried to destroy all the pheasants, which in "unpreserved" places, is a truly wild bird. Again, the elm tree, so characteristic a part now of our English landscape, is not a native, so cut them all down, as well as all the peaches, apricots and cherries! Nay, more, to be strictly

logical, if Mr. Paton is not living in the same county in which he was born, he ought, on his own theory, to be destroyed at sight! I don't know, perhaps he ought. But, joking apart, I do most sincerely hope that no one will be deterred from introducing any harmless and beautiful insect to any suitable locality because such a practice does not meet with the approval of a few quasi- (very much *quasi*) scientists suffering from a locality complex.—GEORGE WHEELER; 29, Gratwicke Road, Worthing.

COURTSHIP IN *AGLAIS URTICAE* L.—On April 19, 1940, it was sunny, though with sudden puffs of quite cold wind. Two *urticae* alighted on a recently dug flower-bed in my garden. The larger female had quite a battered appearance, but the male which settled slightly in her rear, with his wings overlapping hers as in a crowded storebox, appeared to be quite fresh. Both had their wings outspread, but were not in copula. The male beat a regular tattoo on her upper wings with his antennae. Thanks to the absence of aeroplanes and nearby railway activities this was quite audible, and seemed to be carried out with each antenna alternately. The female made no protest, and this went on for several minutes before a sudden puff of wind dispersed them.—J. MANWARING BAINES, B.Sc.; Hastings.

HAWK-MOTHS IN CAITHNESS.—Four species of hawk-moths have so far occurred in this Northern county. Details are as follows:—*Laotloe populi*: In July, 1936, I found sterile ova of this species on two poplars at Keiss. *Acherontia atropos*: A specimen in good condition was captured at Castletown in August, 1938. There is also an earlier record of one captured at Watten on September 10, 1910 (see *Annals of Scottish Natural History*, 1911, p. 119). *Herse convolvuli*: A fine specimen was found inside a house in Wick in the autumn of 1935. *Macroglossum stellatarum*: In the *Scottish Naturalist* for November-December, 1934, John Bain, then stationed at Noss Head Lighthouse, records that he saw this insect on two successive days in June, 1933.—SINCLAIR SWANSON; Keiss Village, Wick, Caithness.

TRYPHAENA PRONUBA AND PLUSIA GAMMA IN MARCH.—On March 22 I caught, at Marlborough, *Triphaena pronuba* in very good condition at sugar; also a female *Plusia gamma* on the same date at *Daphne mezereum*, and another on the 26th. Both of them deposited fertile ova. The average first date for the appearance of *T. pronuba* in his district is June 17, and that of *P. gamma* May 11. The average dates are based on the observations of the Marlborough College N.H.S. and those of the late Edward Meyrick, F.R.S.—P. M. SHEPPARD; Westall, Marlborough, Wilts, May 10, 1940.

LAMPROPTERYX SUFFUMATA AB. PORRITIA (ROBSON) IN THE FOREST OF DEAN.—On May 12 I was interested to take in the Forest of Dean *Lampropteryx suffumata* ab. *porritia*, hitherto only recorded, I believe, from Dover and from Huddersfield. The specimen was a female in very fresh condition. With some misgiving I left her in a

box with galium for two nights, but was rewarded by some thirty ova which appear fertile. Fortunately she has not damaged herself.—AUSTIN RICHARDSON; Beaudesert Park, Minchinhampton, Glos.

KIMMINSIA RAVA (WITHY) IN HAMPSHIRE.—Whilst searching for emerging *Raphidia maculicollis* at the foot of Scotch pines in Bournemouth on May 12, 1940, I was fortunate enough to take a specimen of *K. rava* emerging. As it was a male, I was able to identify it with certainty. This rare and purely British neuropteran has so far been taken in only two counties—in Surrey by Wilson, Withycombe and Kimmins, and in Kent by myself. A long search, repeated on successive days, failed to find any more, but a single pupal skin was found on the trunk of a pine, and probably belonged to this species.—F. C. FRASER; 55, Glenferness Av., Bournemouth, Winton.

AN EXCEPTIONAL NIGHT'S COLLECTING IN MIDDLESEX.—It may be of interest to put on record the results of an exceptionally successful night's collecting in a Middlesex wood during last July (July 8, 1939). I was with Mr. C. H. Hards and we used two petrol vapour lamps on a sheet, laid flat on the ground on a small bank, at the side of a drive through a wood only a few acres in extent. There was a strong S.W. wind and intermittent drizzle until about 2.30 a.m. The clouds cleared at about 3 a.m. and we then finished work. We sugared about 40 trees, but this method of collecting was not very remunerative and there were never more than about half a dozen specimens on any one tree; in fact most of them were completely barren the whole night. However, the results at light more than offset the failure of sugar. The trip was actually made in search of *Dicycla oo*, which I had taken in the locality in 1938, but though we did not take *D. oo*, we were not disappointed with our outing.

The following is a list of the species taken: *Mimas tiliae*, one at light. *Stauropus fagi*, one at light. *Drymonia ruficornis*, two at light. *Lophopteryx capucina*, two at light. *Phalera bucephala*, two at light. *Habrosyne derasa*, a few at sugar. *Thyatira batis*, one at sugar. *Tethea ocularis*, one at sugar. *Apatele megacephala*, one at sugar. *Agrotis exclamationis*, a few at sugar. *Diarsia brunnea*, a few at sugar. *D. festiva*, a few at sugar. *Axylia putris*, one at light. *Triphaena promuba*, a number at sugar. *Polia nebulosa*, a few at sugar. *Procus strigilis*, a number at sugar. *P. latruncula*, a number at sugar. *Apamea secalis*, a few at sugar. *A. lithoxylaeca*, a few at sugar. *A. monoglypha*, common at sugar. *A. hepatica*, a number at sugar. *Dypterygia scabriuscula*, one at sugar. *Meristis trigrammica*, one at sugar. *Caradrina blanda*, a few at sugar. *Rusina umbratica*, a few at light. *Cosmia trapezina*, one at sugar. *Laspeyria flexula*, a few at light. *Hypena proboscidalis*, a few at light. *Hyparrchus papilionaria*, very common at light and flying. *Comibaena pustulata*, swarming at light; quite the commonest insect. *Iodis lactearia*, a few flying. *Hemithea aestivaria*, common at light. *Sterrhia aversata*, fairly common at light. *Ortholitha chenopodiata*, a few at light. *Lygris pyraliata*, one at light. *Euphyia bilineata*,

fairly common at light. *Hydriomena furcata*, fairly common at light. *Asthera albulata*, one at light. *Eupithecia innotata* race *fraxinata*, one at light. *Chloroclystis coronata*, one at light. *C. rectangulata*, one at light. *Lomaspilis marginata*, one at light. *Cubera pusaria*, a number at light. *Campaea margaritaria*, very common at light. *Hygrochroa syringaria*, two at light. *Oourapteryx sambucaria*, one at light. *Opisthograptis luteolata*, fairly common at light. *Biston betularia*, one (typical) at light. *Cleora gemmaria*, very common at light. *C. repandata*, very common at light. *Boarmia roboraria*, swarming at light; could have taken dozens. *Ectropis crepuscularia*, a few at light. *E. extersaria*, common at light.—E. W. CLASSEY; 143, Portnall Road, W. 9.

ABUNDANCE OF AGLAIS URTICAE LAST AUTUMN, ETC.—In parts of Wiltshire and in some other localities in various western counties, *A. urticae* was in great quantities in September of last year (1939). In general it was more abundant than usual, and in certain places on the Wiltshire Downs it was literally in swarms. In one valley, where normally there are a few *urticae*, it was present in hundreds for several days. On the afternoon of September 7 I examined and noted about 160. The number was limited only by the time at my disposal, otherwise I could have gone on indefinitely. The following afternoon they had spread somewhat, but I was able to examine some 60 or 70. These were all fresh, there being practically no sign of those which I had netted the previous day. On the two following days they were rather fewer, presumably having spread over a wider area, though I was able to examine 30 or 40 on each occasion. After this the quantity greatly fell off, being not much greater than in any normal year. Colonel L. Wood tells me that they had been swarming in this area for several days before I actually went there. As might be expected in such a large quantity, there was a certain number of interesting forms among them, chiefly ab. *polaris*, and colour variations, some very pale indeed. I was fortunate, however, on September 7 to take a fine ♂ ab. *nigra* in almost bred condition. The black hind wings of this were very conspicuous among several normal forms on a scabious head. This was the only example of this extreme form seen. In the same locality there was an abundance of *Vanessa cardui*, which seems to have been general last year; but only one *Colias croceus* (*edusa*) was seen, a worn male. Colonel Wood reports taking a female *C. hyale* there on September 10—the only one I have ever heard of from this district. *C. croceus* was conspicuously absent from most of its West Country localities. The only ones noted, other than that recorded above, were several worn males at Weymouth in the second week of September.—NORMAN A. WATKINS, M.A., F.R.E.S.; Belcombe Court, Bradford-on-Avon, Wilts.

We regret to record the death of Miss Margaret Fountaine and Sir Thomas Hudson Beare.—ED.

RECENT LITERATURE.

The latest part (Vol. IV, pt. 2) of the *Transactions of the Suffolk Naturalists' Society* already reflects the incidence of war. It is much attenuated and contains no entomological papers, this interest being restricted to some eighteen pages of miscellaneous notes, mostly by the editor, and entirely of local concern. A good many new county records are reported. Among recently issued leaflets of the *United States Department of Agriculture* are two, No. 186, Domestic Mosquitoes, and 192, Centipedes and Millipedes in the House, the contents of which are of general value; both contain simple directions as to the practical steps that can be taken to mitigate these nuisances. The Report of the *Marlborough College Natural History Society* for 1939 shows that entomology continues to flourish there. It is good to see so much attention being paid to the Diptera for a change, thus producing many additions to the list. P. M. Sheppard's account of his weighing experiments with *Sphinx ligustri* larvae confirms, and seems almost to have been inspired by L. G. Hull's observations (*Entom.*, 71 : 268) so closely does it agree in many ways, though no reference to Hull's work is made. Volume 6 of the *Transactions of the Society of British Entomology* contains seven papers of mixed interest and merit. Dicker's account of the insects (132 pp.) associated with cultivated *Rubus* is almost exclusively of economic importance. In his careful study of the wing venation of the larger Dytiscidae, F. D. Goodliffe shows conclusively that this rather neglected aspect of taxonomy in the Coleoptera has real value; fortunately increasing attention is being paid to it nowadays. H. P. Moon in *Aspects of the Ecology of Aquatic Insects* makes the remarkable discovery that the nature of the bottom has a lot to do with it. Another ecological paper, by Pearce and Walton, illustrates with a wealth of detailed records a method of ecological survey based on the Water-bugs; as the authors say, their observations do not lead to any definite conclusions (possibly because no exact standards for the comparison of their numerous localities could be set up), but rather to the raising of many interesting questions. The new matter in the account by Richards and Hamm of the Biology of British Pompilidae consists of Hamm's records of prey; the authors have, however, provided a very full and comprehensive summary of the known facts in the biology of these wasps on the basis of an analysis of the extensive and very scattered literature. Another part consists of a check-list and host-list of ectoparasites of British mammals, compiled by G. B. Thompson. The paper by J. L. Williams on spermatophores and their measurements in British Lepidoptera opens up a new aspect in the comparative morphology of this Order which might profitably be used at times by the taxonomist.

THE ENTOMOLOGIST.

VOL. LXXIII.]

AUGUST, 1940.

[No. 927

A NEW BRITISH COLEOPHORID: *COLEOPHORA OTITAE* ZELLER.

By H. M. EDELSTEN, F.R.E.S.

(Plate II.)

WHEN in south-east Kent on June 25, 1939, I noticed that some of the leaves of *Silene nutans* had white blotches on them, caused by a larva feeding on the under surface of the leaf and leaving only the upper cuticle. On turning up the leaf I found beneath or else hidden in the moss and shingle a long Coleophorid case which was strange to me. I collected a number, in case they might produce an interesting parasite even if they only belonged to a common species.

The larvae fed until mid July. When the supply of food ran out they took readily to leaves of *Silene italica* which I had growing in the garden. With the exception of one larva they would not touch *Lychnis Flos-cuculi*. When about to pupate the larvae hide themselves away among the moss and shingle in which the plant grows.

The first imago emerged on August 21 and the last on September 11.

This species was first described by Zeller (*Isis*, 1839, p. 207). It is rather curious that Stainton should include *C. otitae* and figure the life-history in his *Natural History of the Tineina* (4, pt. 1, 1859: 142), evidently anticipating its discovery in Britain. The time of appearance, larval habits and long case distinguish *C. otitae* from *C. nutantella* Mühlig (syn. *inflatae* Stainton). The difference between the species may be summarized as follows:

<i>C. otitae</i> .	<i>C. nutantella</i> .
Fore wings darker and more heavily dusted with blackish scales.	Fore wings light ochreous with only a few blackish scales.
Time of appearance: August/September (July mentioned on the Continent).	June/July.
Larva feeds on the leaves.	Larva feeds on calyx or capsule.
Larva has two black spots on fourth segment.	No black spots on fourth segment.
Case ochreous, long, cylindrical, ridges covered with blackish fragments.	Case whiter, short, ridges not so heavily covered with particles.
Emergence end prominently winged.	Emergence end less winged.

The black particles on the ridges of the case of *C. otitae* appear to consist of vegetable matter, probably decayed moss; some of them look more like cinders, of which the shingle is full. A few of the cases of *C. nutantella* in the British Museum (Natural History) have little grains of sand and fragments of the seed capsule on the ridges.

It is not yet known whether the egg of *C. otitae* hatches in the autumn or not until the spring.

The cases of *C. nutantella* can be found on the seed-heads of *Silene inflata* from August until May. It is possible that *C. otitae* may also occur in the Breck on *Silene otites*.

C. leucapennella Hübner might also be looked for in this country on *Silene inflata*, *S. nutans* and *Lychnis viscaria*. One specimen has been recorded from Denton, Norfolk (Cruttwell, 1890), and there are four specimens in the British Museum labelled A. C. Vine, bred 1884, 1885, presented by the Hon. N. C. Rothschild in 1923, one of which bears the locality "Brighton."

I am indebted to Mr. H. Stringer for his help in determining the species, to Mr. L. T. Ford for lending bred specimens of *C. nutantella* and blown larvae of both species, and to Mr. W. H. T. Tams for the beautiful photographs.

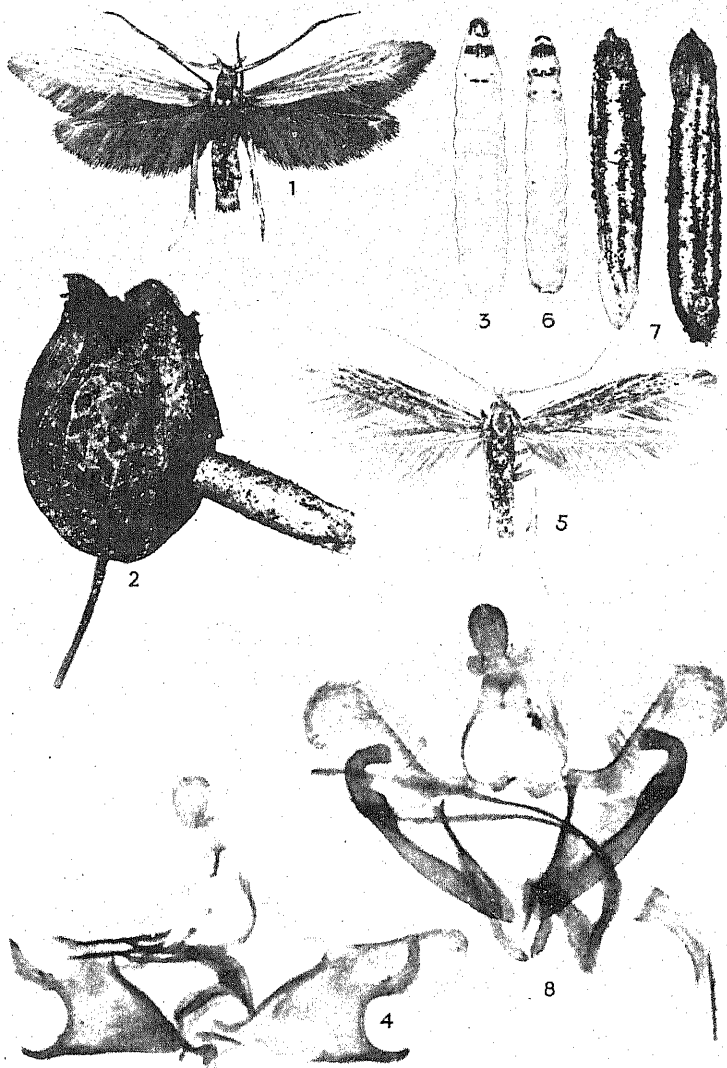
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 STAINTON (1859).—*Nat. Hist. Tineina*, 4, pt. 1: 142, 224, pls. 3, 6.
 CHRETIEN (1901).—*Le Naturaliste*, 2nd series, 333: 17. (Microlépidoptères Du *Silene Nutans* L.)

EXPLANATION OF PLATE II.

- | | |
|---------------------------------|-----------------------------|
| FIG. 1.— <i>C. nutantella</i> . | FIG. 5.— <i>C. otitae</i> . |
| FIG. 2.— " case. | FIG. 6.— " larva. |
| FIG. 3.— " larva. | FIG. 7.— " cases. |
| FIG. 4.— " genitalia. | FIG. 8.— " genitalia. |

EARLY APPEARANCES.—On March 10 I watched for two minutes a *Polygonia c-album* flitting about at the sides of a pathway between two garden fences, at Fetcham, Surrey. Mr. J. H. G. Peterken informed me that he had seen one in Essex on the same date. I saw *Aglais urticae* the same day and have seen a few odd ones since, while a number of *Nymphalis io* have been about since the middle of April. The cold of winter does not seem to have been sufficient to eliminate these species, being as it was a drier cold than so often comes to us here. A Cynipid fly, *Diplolepis folii*, which emerged on December 13, lived for 77 days in a glass jar, though frequently exposed to several degrees of frost.—H. J. BURKILL; 3, Newman's Court, Cornhill, E.C. 3.



W. H. T. Tams, photo.

Adlard & Son, Ltd.

Coleophora olitae and *C. nutantella*.



EUIPISTA FLAVIPENNELLA (DUP.) (LEP. COLEOPHORIDAE) : AN ADDITION TO THE
BRITISH FAUNA.

BY F. N. PIERCE, F.R.E.S.

THE earliest reference to the species of the *E. flavipennella* group is in 1828, in Haworth's *Lep. Brit.*, 4 : 537, No. 20 : "*Porrectaria lutarea* : All wings pale golden yellowish, shining, unmarked." In 1834 this is followed by Stephens (*Ill. Brit. Ent. Haust.*, 4 : 281, No. 8), who practically re-described Haworth's insect. At the same time (*loc. cit.*, No. 9) Stephens described *Astyages ochroleucella* : "Ant. wings shining, pale reddish ochreous, immaculate." In Wood (1837, *Index Ento.*), fig. 1398 is supposed to illustrate *lutarea*; fig. 1399 illustrates *ochroleucella*. All these references are, however, indefinite, and only if Haworth's and Stephens's types should be available would it be possible from an examination of the genitalia to decide to which species these names really apply. Stainton (1854, *List Brit. Animals in B.M.*, 16 : 133) places Haworth's and Stephens's names under *Coleophora lutipennella* (*Ornix lutipennella* Zeller, *Isis*, 1838, p. 713) as doubtful synonyms.

In Doubleday's *Synonymic List* (1859, p. 33, col. 3) we find *Coleophora lutipennella* Zell. In South's list *lutipennella* occurs with the author's Zell., Sta. In Stainton's *Insecta Britannica Lep. Tineina* (1854, p. 224) there occurs *lutipennella* Zeller, *Isis*, 1838, p. 713, with the synonymy, description, etc. : "Dup. ?—*lutarea* Sta. ; Haw. ? Step. ?—*ochroleucella* Step. ? Description : "F.W. coarsely scaled, ochreous-yellow, cilia at the apex ochreous-yellow, paler at the anal angle. Case : Oak, also birch, in a straight nearly cylindrical yellowish brown case." In the *Manual* (p. 384) the description is similar except, "fringes at the anal angle pale ochreous." From this it is pretty obvious that Zeller and Stainton were in close collaboration over this species.

Rebel (1901, *Cat. Lep.*, pt. 2 : 190) lists both *lutipennella* Zeller (No. 3640) and *flavipennella* (No. 3643), but attributes the latter to Herrich Schäffer (fig. 675, v : 234), without reference to Duponchel. Dr. Hering (1930, *Zs. angew. Ent.*, 17 : 457) figures the genitalia of the two species, and calls our common species *flavipennella*, H.-S., and the other *lutipennella*, Zell. This has been copied by Mr. Per Benarder (1939, *Opuscula Entomologica*, p. 107), who, in Sweden, found among 132 so-called *lutipennella*, 115 of Hering's *flavipennella* and 17 *lutipennella*. The same relative proportion occurs in Britain. It is evident from this that one species is more common than the other.

It became necessary to examine the types of the two species. Fortunately the Zeller type of *lutipennella* is in the British Museum and this Mr. Stringer has examined. It is a male and the genitalia show it to be our common British species, which has hitherto been known correctly therefore as *lutipennella* Zeller.

Recent investigations show that besides this, we have in Britain the second species which, in spite of Dr. Hering's article, I think we can accept as *flavipennella* Dup. Dr. Hering compares *lutipennella* Zeller with *flavipennella* Herrich-Schäffer, and ignores Duponchel's much earlier introduction of this name. On this point Mr. Bainbrigge Fletcher has most kindly given me the following details: Duponchel described his species as *Ornix flavipennella* in *Lep. France*, Supp. IV, pp. 339 and 497, t. 78, f. 6 (published 18.vi.1843), and took its name from Fischer von Röslerstamm MS. His specimen (or specimens, he does not say) from which he drew up his description was (or were) sent him by Monsieur Parreyss, who had been given the name *flavipennella* by Fischer von Röslerstamm. Duponchel gave no locality, but his specimen was presumably of German origin. In 1853 (i. e. ten years after Duponchel) Herrich-Schäffer figured the forewing only (*Schmett. Europa*, V, tab. 88, fig. 675) under the name *Coleophora flavipennella*, and in 1855 (*Schmett. Europa*, V, p. 234, No. 666) described the species under the same name from specimens found in June and July in the Laer Wald, near Vienna, at Tivoli "around oaks," also at Regensburg. He also described a larval case which, he says, was from *Pyrus communis* (pear) received from H. Bremy. Joannis says nothing of any specimen being still in existence in the Duponchel Collection, so apparently Duponchel's type has perished. Joannis noted when there are specimens of other species.

It is unfortunate that Duponchel's type is missing. Still, although without it we cannot be absolutely certain of the identity of Duponchel's *flavipennella*, yet we can with considerable justification assume that, since he recognized and described Zeller's *lutipennella* (pp. 293-294) from specimens also received from Monsieur Parreyss, it was the other (new) species which he named *flavipennella*.

The males of these two species, which are so much alike, can easily be separated "in the dry" as the genitalia are well exposed. In *lutipennella* the valva are two large, broad plates edged with bristles. These are figured in my *Genitalia of Tineidae*, plate xlii, spread apart; in situ the bristly edge is uppermost. *Flavipennella* has two separate arms, with file-like, small thorns (a rasp). As regards wing markings *lutipennella* has the scales rather smooth, and pale yellow; *flavipennella* has coarser scales, some edged with fuscous, but this is by no means constant, and worn specimens

are difficult to place. I have found specimens of the latter in the Brocklehurst Collection, and the Rev. J. W. Metcalfe has sent me specimens from Stoke Canon, Exeter, bred vi.35. Mr. Bainbrigge Fletcher has also sent me specimens from the New Forest. When further series are examined no doubt many other localities will be added.

Mr. Metcalfe kindly adds the following details of the larval cases : " In my series, in which the two species were mixed, I found that I had two similar cases, one dark fuscous or reddish fuscous and the other pale straw coloured. This spring I collected a number of cases and kept the dark and light separate. On examination of the resultant imagines I find that the dark cases all produced *lutipennella* Zell. and the pale cases *flavipennella* Dup. I may add that the two series placed side by side show that *lutipennella* is a much smoother looking insect, the scales in *flavipennella* having a distinctly rougher appearance. *Lutipennella* has also a rather greyer tinge but otherwise they are very similar."

The Old Rectory,
Warmington,
Peterborough;
March 9, 1940.

COLIAS CROCEUS IN JULY.—While collecting in some Wiltshire woods on July 14, 1940, I was surprised to see a male clouded yellow fly past me along a ride—possibly a forerunner of an invasion.—C. G. M. DE WORMS.

ANOTHER RECORD OF DANAUS PLEXIPPUS IN GREAT BRITAIN.—Mr. A. G. Walker, at present working at Rothamsted, reports to me that in the early part of September, 1935, he saw a Monarch coming in from the sea at Aberystwyth. He actually caught the specimen, but while he was handling it, it escaped again.—C. B. WILLIAMS; Rothamsted Experimental Station, Harpenden, Herts.

REMARKABLE ABERRATION OF AGLAIS URTICAE.—On April 11 last at Ashted, Surrey, I noticed an individual of *Aglais urticae* having the right fore wing of a metallic white colour, the three black costal blotches being united. The remaining three wings appeared to be normal. Unfortunately I was unable to effect a capture.—A. A. W. BUCKSTONE; 90, Pains Way, Ewell, Surrey.

GYNANDROUS PERCONIA STRIGILLARIA.—It may be of interest to put on record the capture of a gynandromorph *Perconia strigillaria*, which I took in perfect condition on June 13, 1940, near Woking, Surrey. The right side is male.—J. M. CHALMERS-HUNT; Little Orchard, Broad Oak, near Canterbury.

[I cannot trace any record of a gynandromorph of this species having been taken in England before, nor can Dr. Cockayne recollect one.—Ed.]

NOTES ON THE LIFE-HISTORY OF *PERIZOMA TAENIATA* STEPH., WITH BREEDING HINTS, ETC.

BY P. J. BURTON.

HAVING read Mr. F. Littlewood's comprehensive article on the life-history of this Geometer in the March, 1939, issue of the *Entomologist*, and having arranged to spend my holidays in the Lake District last year, I determined if possible to emulate his achievement in rearing the species from the egg. I shall not attempt to add anything to the very complete account of the insect in all its stages as portrayed by him, but my experience brings out one or two new features which may be of practical interest to others wishing to rear it.

In early July I took the liberty of calling on Mr. A. E. Wright, of Grange, to whom I was greatly indebted for placing all his knowledge of this—and other—local insects at my disposal, and for personally conducting me to its now almost vanished haunts at Grange and showing me the *modus operandi* for its capture. I revisited the spot several times by day and night, and secured ten specimens of which but one was taken at night, all males that became poorer in condition at each visit. On July 18, two days before I was leaving, I made one more attempt and, to my delight, the very last yew tree I tried produced a very perfect female—so perfect, in fact, that I felt sure she was freshly emerged. She was put into a 2-lb. glass jar and, with a few shreds of moss and *Linaria* in the bottom and a sprig of yew to rest on and one of the males introduced, under a cover of cheese-cloth on which a pad of wool was kept moistened with sugar and water, conveyed home to Lowestoft. However, impregnation had already occurred, as she started to lay at dusk that evening, about 20 ova at first and a gradually diminishing number on each successive night. Some ova were laid definitely on, and slightly attached to, leaves of the yew and *Linaria*, but were easily removed with the touch of a brush.

On the evening of July 24 I was amazed to find the pair *in cop*. The ova already laid, approximating 100, were then removed and kept separate from the remainder laid up to August 10, when she died, quite spent. The last batch numbered approximately 60. This second pairing seems to be the most interesting fact of my experience with the insect and, no doubt, occurs in the natural state, which accounts for the great preponderance of males and the extended period of their appearance and obviously has a direct bearing on the fertility of the ova. This will account for the failure of 30 per cent. of Mr. Littlewood's ova to hatch which, he said, was due to their being laid by "spent females." My two batches of

ova were kept bone-dry in two small glass-bottomed pill-boxes ; of the first batch only one failed to hatch and of the second batch only three failed, showing that damp moss is unnecessary for properly fertilized eggs. Emergence was spread over the period August 2-27.

Rearing hints.—Whilst at Grange I searched the wood for possible food-plants and dug up one—then unfamiliar to me—as it seemed fairly succulent and potted it up. As Mr. Littlewood gave no hints as to how he kept his larvae, I was not sure how best to start them off. But I put them, as they emerged, into a 2-in. glass-topped metal box, lined with white blotting-paper and containing pads of the capsuled wall moss on which were laid pieces of knotgrass and *Linaria*. The whole lot had to live for several weeks in this small box, with only scant attention and change of food ; such overcrowding is not advocated, but it was at the period of national crisis and I hardly had the time or inclination to bother with them. After the tension of the first few weeks had eased my interest in them revived a little ; and when I counted the survivors about 130 were present—surprisingly, for the tin had frequently been full of mould. These were divided and put into two 3-in. boxes and fed as before up to the end of September.

Two of the larvae—I wish it had been more—I tried with garden Nasturtium leaves, on which they fed for a fortnight ; but, knowing that this supply would soon fail, I thought of my potted-up plant, which I found to be Self-heal, and substituted this. They took to it at once and had nothing else at any period of their lives. One died during the winter ; but the other far outstripped any of the rest, both in size, which extended to $\frac{3}{4}$ in. when fully grown, and in rapidity of growth ; it spun up on March 13, having spent seven months in the close confinement of a 2-in. metal box, and a fine female emerged on April 15. It would have been interesting to have seen, had I risked more larvae, if this precocity was due to chance or the close confinement and sole diet of Self-heal.

At the end of September I thought it would be a good plan to give the others some ventilation, so they were transferred to three 4-in. flower-pots filled to the brim with soil and a top layer of silver sand on which were put the moss and food-plants, and a loose cover of fine mesh material was tied on. Arguing that their natural haunts were pretty damp, the pots were stood in saucers of water and kept out of doors, until the frosts came, protected from the sun. I tried Wild Strawberry as a food-plant on many occasions, before and after hibernation ; but it was entirely ignored. I doubt the value of moss also as a food, except for the freshly hatched larvae which do eat the capsules and stalks of the wall moss ; but the same moss, after hibernation and then covered with fresh green capsules, is quite

ignored—at any rate in the presence of *Linaria* and Self-heal. Most of the casualties occurred amongst the quite small larvae, usually those moulting; and by mid-November there were 94 left, which was not too bad considering all they had suffered.

Hibernation.—Not knowing whether to hibernate them by keeping damp, encouraging mould, or keeping dry, I tried different degrees of humidity and different food-plants, by filling four pots as before and planting tufts of moss, not too close together to allow air-circulation. Pot A had moss and a large plant of *Linaria*, with 20 larvae, and was kept quite damp. Pot B, a 5-in. one, had mixed varieties of moss, with 30 larvae, and was kept damp. Pot C had moss and Strawberry and a small root of *Linaria*, with 24 larvae, damped occasionally. Pot D had moss and Self-heal, with 20 larvae, and was kept dry nearly all the time. The whole were kept loosely covered with coarse cheese-cloth upon a cold passage window-sill, except when frosty, and then they were put upon a stone floor in the larder, where they were not quite proof against severe frosts. This winter was one of exceptional severity; and, fearing the continued cold would take heavy toll, I opened the pots in arctic weather on January 26, with the following results: Pot A contained 17 survivors—*Linaria* kept quite fresh, with no signs of being eaten; Pot B 21 survivors; Pot C 11 survivors; Pot D had 5 survivors. The Self-heal soon died under cover and caused a lot of mould. These figures speak for themselves, and show the value of the damper conditions.

The survivors, varying greatly in size, were all put into a 6-in. bulb bowl half filled with soil and sand, with mixed *Linaria* and Self-heal as food, which they immediately started to eat when brought into the sitting-room, where they were kept by day. By night they were kept inside a large wooden box warmed to about 50° by a low-power electric bulb. Unfortunately a mouse discovered this warmth and one night ate a hole in the covering and pulled out a lot of the moss, etc., in the bowl, resulting in the loss of 14 larvae. As they grew larger they were separated according to size and about 6 were put in separate glass pots (the ones that small tongues are sold in I found useful) and so kept until pupation occurred, which was over the period April 5–May 4. Emergence of the batch covered the period May 1–27.

There were only two larval deaths after hibernation (apart from the mouse incident). One larva experimented upon when three-quarter grown refused fresh green capsules of a ground moss for one night, but afterwards fed on them happily for four or five days, after eating apple rind for one night. It was then tried with lettuce, but died almost immediately after eating it greedily.

A good many pupae went mouldy, partly due I think to being

kept too moist in a warm cupboard, but the others all produced perfect insects—14 ♂♂ and 13 ♀♀—a sex ratio very different from that of captures in the wild state.

To sum up: Now that there should be no difficulty over a suitable diet, I do not think it will be at all a difficult species to rear for anyone with the necessary time and patience to give to its very sluggish and slow-growing larvae.

CORYMBITES CUPREUS (F.) IN HAMPSHIRE.—A single male of this northern species was found by myself settled on the leaf of a broad bean in my garden in Bournemouth on May 13, 1940. There has only been one previous record of this beetle from the south of England, and that a doubtful one, viz. from Exeter.—F. C. FRASER; 55, Glenferness Avenue, Bournemouth, Winton.

PROCUS VERSICOLOR AT OXFORD AND IN THE FOREST OF DEAN.—It may be of interest to record the fact that during July, 1939, I took specimens of *Procus versicolor* near Oxford, and in widely separated localities in the Forest of Dean. I believe it to be distributed all over that area. I have not yet taken it in Gloucestershire east of the Severn.—AUSTIN RICHARDSON; Beaudesert Park, Minchinhampton, Glos.

EARLY APPEARANCE OF AGLAIS URTICAE IN CAITHNESS.—Despite the abnormally severe winter, insects generally seem to have appeared earlier than usual. On March 28 there was a heavy fall of snow in Caithness, but two days later I was cheered by the sight of the first *urticae* of the year. This early date for the North compares with April 7 last year and April 10 in 1938.—SINCLAIR SWANSON; Keiss Village, Wick, Caithness.

COLIAS CROCEUS IN MAY.—On May 12 I took a worn female *Colias croceus* at Penderyn, near Brecon. I kept it alive for ten days, hoping for eggs, but had no luck. On May 19 I saw a *Vanessa cardui* flying strongly near Peterstone-super-Ely, near Cardiff. These records are of interest in view of those already published and being so far west, lend weight to the possibility of hibernation in this country, although the winter has been so severe. On opening it, the *Colias* was full of eggs.—D. R. JEFFREYS; 36, Stallcourt Avenue, Roath, Cardiff.

NYMPHALIS IO NEAR GLASGOW.—During the last few years this fine butterfly seems to have extended its range northwards. On May 11 I obtained fresh evidence of its occurrence in Scotland. While visiting Milngavie, a village within a few miles of Glasgow, I was fortunate enough to see an *io* flying along a road. In passing, I may mention that Milngavie, despite its proximity to Glasgow, has always been noted for its rural aspect, and each year the first cuckoo in Scotland is invariably heard there.—SINCLAIR SWANSON; Keiss Village, Wick, Caithness.

DRAGONFLIES IN 1939.

BY H. G. ATTLEE.

THE occurrence of a male *Sympetrum sanguineum* Müller near Pen Pond, Richmond Park, on September 7 is, I think, its nearest to London—it was reported there a year or two ago, and I saw a male in Hampton Court Park, September 3, 1937. My note on this species (72 : 189) should read, “the female dropped ova into the *flote-grass*” (not *floating*); as on the three other occasions noted by me, it oviposited on *dry* grass, not even *over* the water.

Pyrrhosoma nymphula Sulzer heralded the season at Byfleet, where five teneral imagines were seen on May 4. On May 6 a naiad-skin narrower and more parallel than those of *nymphula* was noticed, and when I beat the bur-reeds a female of *Coenagrion pulchellum* Linden flew out. May 11 produced a female of *Brachytron pratense* Müller just emerged, and a skin of *Libellula quadrimaculata* L. floating by the canal bank, while a female of *Cordulia aenea* L. left its skin on the 12th. At a small pond near Hastings on May 14 a yellow male of *Libellula depressa* L. was on the wing, and two *Coenagrion puella* L. emerged in tussocks of rushes. Owing to dull cold weather a search at Hampton Court on May 18 yielded only a dead naiad of *Erythromma najas* Hansemann and one *Enallagma cyathigerum* Charpentier just emerging and hiding behind the *Scirpus* to which it clung; no *Ischnura elegans* Linden could be seen, but one turned up next day at Kew. A smoky-winged male of *Agrion virgo* L. flew from the Crowhurst (Sussex) marsh stream on May 21. A trip to Brockenhurst, May 22, yielded but one male of *Gomphus vulgatissimus* L. (reported just out on 20th); it persistently turned its abdomen vertically erect while sunning on heather; an empty skin of *Platynemis pennipes* Pallas was found by the Oberwater, with a few *nymphula* on wing. On the canal at Newhaw on 24th only two mature males of *Agrion splendens* Harris turned up—no *pennipes* or *elegans*. In cold gusty weather, with little sun, at Hickling on May 28 I found only one orange male of *Libellula fulva* Müller among some 20 *L. quadrimaculata* beaten up from the reeds, etc.; two pairs of *B. pratense* and several males; a few each of *nymphula*, *pulchellum* and *elegans*, but no *cyathigerum*. On May 30 near Tunbridge Wells a naiad-skin of *Cordulegaster boltonii* Donovan was found on rushes, the imago in dying condition below. About eight *Somatochlora metallica* Linden just out were sunning in a sheltered nook by Byfleet canal, May 31.

June 4 saw a male of *Anax imperator* Leach just able to fly (9 a.m.) at Hastings and a less teneral female later on the neighbouring marshes. A visit to West Surrey commons on June 6

produced some six *Orthetrum coerulescens* F. (one blue and one semi-blue male); two or three teneral *A. imperator*; and two females of *Palaeobasis tenella* Villers in mature colour. Some six specimens of *Orthetrum cancellatum* L. in various stages from yellow to almost mature blue were about Pen Ponds, Richmond Park, on June 10. Two *Aeshna isosceles* Müller were seen near Hickling on June 13 (J. Vincent *in litt.*)*. A male of *Sympetrum sanguineum* Müller had just emerged on bur-reed at Hastings on June 18; ten males of *L. depressa* incessantly skirmishing round one pool of 7 by 3 yards in area. Some 20 *Lestes sponsa* Hansemann, mostly teneral, were out at Esher, June 26. In quite sunless cold weather on June 24 one individual each of *O. cancellatum* and *S. metallica* had emerged by noon near Tunbridge Wells. A female of *Sympetrum striolatum* Charpentier was quite strong on the wing at Richmond on June 27; and one or two males of *Aeshna cyanea* Müller at Arbrook Common on the 29th. Two teneral specimens of *Sympetrum danae* Sulzer were seen at Black Pond, Esher, on July 3, at which date it constantly appears there.

Owing to lack of sun *Aeshna grandis* L. was not positively identified till July 13, when a male hawked over Byfleet Canal and a naiad-skin was seen in another part—though it was out probably at Richmond Park on the 5th. A few *Aeshna juncea* L. were well out on Thursley Common by July 25; four *C. aenea* were still on wing there on that date. I saw no *B. pratense* at Hastings after July 1. Many *S. striolatum* emerged there about August 6–13, and the first *Aeshna mixta* Latreille was seen there on August 16 for certain—possibly at Thursley on 15, when an aged female of *P. nymphula* was still on wing. Other late dates were:

A. splendens, two males, Hampton, August 17.

A. virgo, four males, one female; *S. metallica*, one, near Tunbridge Wells, August 18.

L. quadrimaculata, male, Thursley, August 18.

L. depressa probably, female, August 19, Hastings.

C. pulchellum, male, Hastings, August 20, possibly 24th.

P. pennipes, two males at least, Byfleet, August 28.

C. puella, male, Hastings, August 29.

A. imperator, male and female, Hastings, September 1; female ovipositing, Richmond Park, September 6.

P. tenella, two females, Thursley, September 11; still there September 24 (F. M. Luce).

O. coerulescens, five or six, Thursley, September 11; one moribund, September 25 (F. M. L.).

S. sanguineum, male, Hastings, September 10, probably 17th; *I. elegans*, male, September 23; *E. cyathigerum*, male, September 23; *E. naias*, two males, September 25; *C. boltonii*, male,

September 25 ; female, September 27—all near Tunbridge Wells ; the female *boltonii*, with all wings ragged, showed wonderful speed in catching and eating a worker wasp (*V. vulgaris* or *germanica*).

L. sponsa, male, near Tunbridge Wells, September 23 ; but at Thursley a male and very aged female, October 18, and no less than six, October 23 (F. M. L.).

A. grandis, male, Thursley, October 10 ; October 16 (F. M. L.).

A. juncea, one, Esher, October 16, possibly till 18th.

A. cyanea, male, Esher, October 17, but almost certainly (rather than *juncea*) on October 23–24 ; male, Hastings, October 21. At Thursley it was reported to F. M. Luce on November 12 ; in reference to the Hunts record on that date on p. 27, it may be mentioned that at Hastings it was reported by the late A. E. Craven on November 12, 1917, and by myself on 7th, 1937, and on 1st, 1936.

A. mixta, one, Esher, November 2 ; one, Thursley (F. M. L.), November 3 ; at Hastings I last saw it October 8 (only once, August 27, were as many as 10 or 12 seen at once). Very sunless weather was against seeing late Aeshnas.

S. danca, male, Esher ; one, Thursley (F. M. L.) November 2.

S. striolatum, male, Esher, November 3 ; male, female, Hastings, November 19 ; at least two males, near Tunbridge Wells, November 20.

4, Combermere Road,
St. Leonards-on-Sea.

RAPHIDIA MACULICOLLIS STEPHENS PUPATING UNDERGROUND.—On May 25, 1938, I observed *Raphidia maculicollis* emerging at the foot of scotch pines, in a small wood near my house. I was attracted by the movements of the opaque white unexpanded wings of the insects, mistaking them for *Formica rufa* carrying prey. I kept watch for a similar emergence during May, 1939, and finally observed it on May 24, 1939, and the subsequent date. This year I again carried out my investigations and examined some 20 trees daily from the beginning of May. Emergence began on the 9th and lasted until the 12th, being particularly marked on the latter date. Of these, at least 90 per cent. were of the male sex. On the 17th a fresh emergence began but lasted for only two days. Of these, among a great number, only a single male occurred. Many empty pupal cases were also observed. Pupation takes place among the loose bark which, on pines, extends for some distance underground, and when the insect emerges, it rests either on pine needles at the foot of the tree or on the trunk at a distance of 1 to 4 in. from the ground. Generally this species is a rare insect in Bournemouth, so that it is evident that as soon as the wings are dried, the insect rises to the tops of trees. Only old trees are chosen and these with much dead wood at the tops, wherein the larvae can find a suitable home.—F. C. FRASER ; 55, Glenferness Avenue, Bournemouth, Winton.

ODONATA FROM FRANCE AND ITALY, 1937-1938.

BY J. COWLEY, F.R.E.S.

THE Odonata listed below were observed during a fortnight's holiday in Italy in 1938; unfortunately during the journey there by car I had only a single opportunity of a few minutes' collecting in France. I have added the records of three specimens which were collected by Dr. J. W. S. Macfie in 1937, and kindly communicated to me; all other records refer to 1938. The locality Val di Sasso is close to Bordighera, Imperia, Italy; the small aqueduct alongside the footpath and the rocky torrent, with a few pools, below, were known to me from my visit in 1932 (1933, *Ent. mon. Mag.*, 69: 248-250). The neighbouring town of Vallecrosia is in the same province.

Pyrrosoma nymphula Sulzer.—Val di Sasso, July 9, 12.

Ischnura elegans Van der Linden.—Mouth of R. Nervia, Vallecrosia, July 14.

I. pumilio Charpentier.—Le Grand Buëch River, near St. Julien-Beauchêne, Hautes-Alpes, France, July 6. The river at first sight seemed a good locality for Gomphines, but no dragonflies were seen except a few *I. pumilio* and, too briefly to identify, a pruinose-blue Libelluline, at marshy pools close to the river.

Ceragrion tenellum De Villers.—Val di Sasso, July 9, 12, 16, 17; ♀-f. *melanogastrum* Selys, Val di Sasso, July 12.

Lestes viridis viridis Van der Linden.—1 ♀ exuviae, Val di Sasso, July 16.

Agrion haemorrhoidale Van der Linden.—Bandol, Var, France, June 20, 1937 (Macfie); Val di Sasso, July 9, 12, 16, 17. As in 1932, severed wings of this species were seen alongside the aqueduct, and were perhaps the rejected remains of the prey of lizards which abounded there. What must be the "courting flight" of *A. haemorrhoidale* was observed several times, though copulation was not seen to follow; on a male approaching a resting female, the latter opens and closes her wings each time the male comes near, while the male, instead of his usual fluttering flight (similar to that of *A. virgo* and *A. splendens*), vibrates his wings very rapidly and only through a small angle so that they remain close to the horizontal plane, the resulting flight being remarkably slow and steady, and while he flies in this way the apex of the abdomen is arched upwards so that the bright pinkish colour extending from the end of the 7th to the 10th sternites is prominently displayed. I have never observed any such mating display in *A. virgo* or *A. splendens*, nor met with any description in the literature. (Hammond, 1938,

Entomologist, 71 : 85, reports that in the courtship of *A. splendens* the male repeatedly spreads and closes his wings, crawling up and down a reed to face the female. Perhaps the flying display of *A. haemorrhoidale* is only a preliminary to some such further courtship as this, which I was not fortunate enough to see.)

Onychogomphus forcipatus Linnaeus.—Val di Sasso, July 9, 12, 16, 17; on the same dates 9 ♂, 9 ♀ exuviae taken from rocks in the torrent.

Cordulegaster sp.—Two specimens seen, but not identified as to species, by the aqueduct, Val di Sasso, July 17.

Boyeria irene Fonscolombe.—Val di Sasso, 17 ♂, 23 ♀ exuviae, July 9–17; the only imagines seen were an emerging female and another flying along the aqueduct, and two females flying up the torrent, apparently in search of suitable places in which to oviposit, July 16 and 17.

Anax imperator imperator Leach.—Val di Sasso, 1 ♂ by aqueduct, July 17, 1 exuviae by torrent, July 16; mouth of R. Nervia, Vallecrosia, July 14, ovipositing. Mr. K. Walter told me that a large dragonfly often passed up and down narrow channels of the sea between rocks close to the shore at Bordighera, and he identified it as *A. imperator* on being shown a specimen.

Orthetrum coerulescens Fabricius.—Val di Sasso, July 9, 12 (emerging and ovipositing), 16, 17.

Libellula depressa Linnaeus.—Cavalière, Var, France, June 24, 1937 (*Macfie*); Val di Sasso, 1 ♀, July 9; perhaps also present at the mouth of R. Nervia, Vallecrosia, July 14.

Sympetrum fonscolombii Selys.—Mouth of R. Nervia, Vallecrosia, July 14, ovipositing; a single *Sympetrum* exuviae found here is perhaps of this species.

Crocothemis erythraea erythraea Brullé.—Val di Sasso, July 9, 12, 17.

The dragonfly fauna of the Bordighera district is naturally rather restricted, owing to the paucity of suitable waters, there being no ponds or lakes, and the rivers and streams being torrential in their descent from the Maritime Alps, here close to the coast, and liable to be dry in the summer. The torrent in the Val di Sasso feeds the aqueduct, and apparently all the species breeding in the latter also breed in the torrent, so far as I have been able to observe; *O. forcipatus* is the only species which can definitely be said to be confined to the torrent. Possibly some species also breed in the numerous water-tanks in the gardens, but no exuviae were obtained from them.

Norwood Hill House,
Horley,
Surrey;
June 13, 1940.

A SYNOPSIS OF THE GENUS *ELMOPARNUS* SHARP
(COLEOPTERA, DRYOPIDAE).

BY H. E. HINTON, PH.D.

(Department of Entomology, British Museum [Natural History].)

Elmoparnus includes only two species, both of which are very rare. The genotype, *E. brevicornis* Sharp (1882), was described from a single specimen collected in Panama, and *E. glaber* Grouv. (1889) was described from a few specimens taken in Venezuela. Since that time apparently no further specimens of either species have been discovered, except for a single specimen of *E. brevicornis* (Panama: Porto Bello, 1911, *E. Schwarz*), which is now in the collection of the U.S. National Museum, and was determined as this species by me in 1934.

The generic diagnosis, as well as the descriptions of both species, contain statements which are misleading and some which are entirely incorrect. The opportunity is taken here of correcting these errors, and extending the generic diagnosis to make it comparable with modern generic descriptions.

I have to thank Dr. R. Jeannel for the loan of two female paratypes of *E. glaber*, and Miss O. F. Tassart for Fig. 6. Other illustrations were drawn by myself with the aid of a camera lucida; lines next to figures refer to a length of 0.20 mm.

Elmoparnus Sharp.1882. *Elmoparnus* Sharp, Biol. Centr.-Amer. Col. (2) 1: 125.

Body obovate, moderately strongly convex. Most of dorsal and ventral surface glabrous or sparsely clothed with fine hairs; moderately fine and dense tomentum confined to the following areas: (1) most of head; (2) ventral portion of hypomera; (3) sides of pro-, meso- and metasternum; and (4) sides of abdominal sternites. Head when seen from below capable of being retracted so that none of the mouth-parts is visible. Antennae (Figs. 5 and 9) 9- or 10-segmented. Mandible (Fig. 3) with three acute apical teeth; prostheca large, membranous except anteriorly on outer side, where it is sclerotized, and clothed with fine hair-like processes. Maxilla (Fig. 1) with palp 4-segmented; galea and lacinia separate and apex of each densely hairy or spinose. Labial palp 3-segmented and prementum without distinct palpiger. Mentum broader and about three times as long as submentum; anterior angles produced and acute. Gula subparallel, broader than submentum and about two times as long. Pronotum with the basal margin trisinate, broadly and deeply so on each side

and more narrowly and shallowly so in front of scutellum; anterior margin very deeply and nearly truncately emarginate, with the anterior angles very strongly produced and moderately deflexed. Sublateral sulcus on each side confined to basal two-fifths or nearly complete. Disk evenly convex. *Elytra* punctate and without distinct striae; each elytron with an oval and densely pubescent depression which is contiguous to lateral margin at about apical fourth. Hind wing (Fig. 11) without a radial cross vein; with a complete anal cell; with apical part of first anal present; second anal with first, second and third branches well-developed; third anal with a well-developed second branch; fourth anal well-developed; cubito-anal cross vein complete and joining cubitus to first anal. *Prosternum* (Fig. 4) long in front of anterior coxae; process long, very broad between front coxae, and suddenly narrowed and parallel behind coxae. Mesosternum with a very broad and deep groove for the reception of the prosternal process. *Legs* with the visible part of the front coxae transverse and front trochantin with externally visible part large. Claws without teeth.

Genotype: *Elmoparnus brevicornis* Sharp (by monotypy).

Sharp's statement (*loc. cit.*), "This genus is established for a minute insect having the appearance of an *Elmis*, but allied rather to *Parnus* . . ." should not be taken to mean that *Elmoparnus* is in any way an annectant form between the Elmidae and Dryopidae. On the contrary, it is in all respects a typical member of the Dryopidae, very closely allied to *Dryops*. The elytra are not without pubescence as stated by Sharp, but are clothed with sparse, very fine, recumbent to suberect hairs except for a small, densely pubescent patch on apical fourth of each elytron contiguous to the lateral margin. In *E. glaber* the pronotum is also finely and sparsely pubescent. The sparse pronotal and elytral pubescence is in striking contrast to that of the species of *Dryops* which are in nearly all cases densely pubescent, though *D. aequinocitalis* Grouv. has an intermediate type of pubescence. Both species of *Elmoparnus* may be distinguished from all known species of *Dryops* by the presence of a shallow, densely pubescent depression on each elytron at apical fourth.

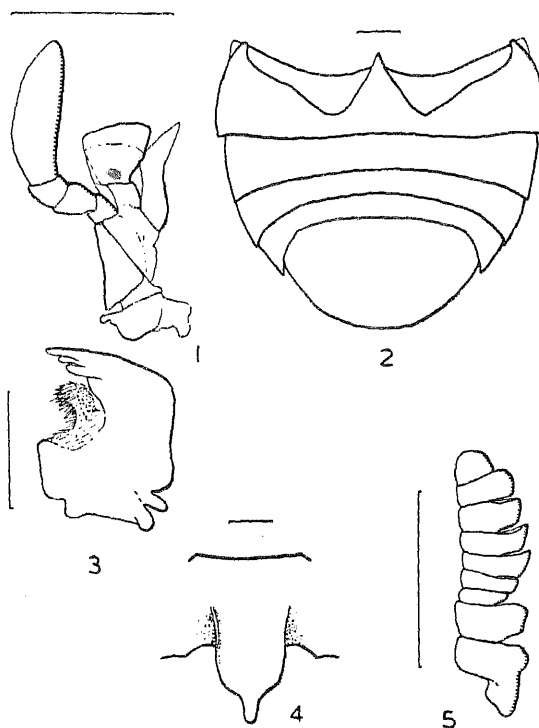
The antennae are close to those of *Dryops* and like some of the Old World species of the latter genus have nine or ten segments. The second antennal segment is relatively smaller and less developed than in any species of *Dryops*. The sublateral pronotal sulcus is complete or nearly so in all the species of *Dryops*, whereas in one of the species of *Elmoparnus*, *E. brevicornis*, it is confined to basal two-fifths. The venation of the hind wing is nearly identical to that of typical species of *Dryops*.

Elmoparnus brevicornis Sharp.

(Figs. 1-7.)

1882. *Elmoparnus brevicornis* Sharp, Biol. Centr.-Amer. Col. (2) 1 : 125.

Male holotype : Length, 3.1 mm. ; breadth, 1.34 mm. Obovate, moderately convex. Cuticle shining, rufo-piceous ; club of antennae, mouth-parts, tibiae, and tarsi paler, often brownish-testaceous. *Head* with round punctures about a third finer than facets of eyes and



FIGS. 1-5.—*Elmoparnus brevicornis* Sharp. (1) Ventral view of right maxilla. Setae are omitted. (2) Ventral view of abdomen. (3) Mandible. (4) Prosternum. (5) Antenna.

separated by two to three diameters ; surface between these punctures with dense to confluent microscopic punctures. Antennae (Fig. 5) 9-segmented. Clypeus with middle of anterior margin broadly rounded and each side deeply, broadly sinuate ; anterior angles feebly produced, nearly rectangular. Labrum with anterior margin shallowly, arcuately emarginate on most of middle and angle on each side very broadly rounded ; on each side on apical half with a large, dense

patch of very long, fine, erect, golden-testaceous hairs. *Pronotum* with broadest point, which is across basal third, about a fourth broader than long (1.08 mm. : 0.73 mm.) and base broader than apex (0.98 mm. : 0.79 mm.). Shape as figured (Fig. 6). Sublateral carinae moderately prominent, with inner sides sharp, and 0.274 mm. long. Surface of middle disk with round, deep punctures which are slightly coarser than facets of eyes or about 0.026 mm. broad and are

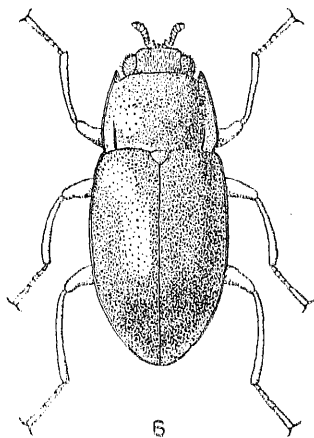


FIG. 6.—*Elmoparnus brevicornis* Sharp.

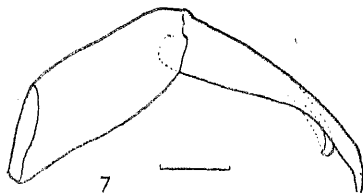


FIG. 7.—*Elmoparnus brevicornis* Sharp. Lateral view of left side of male genitalia.

usually separated by two diameters; along anterior margin these punctures become finer and denser; near lateral margins they are usually separated by three diameters; on basal fourth they are about two-thirds as coarse as discal ones and are usually separated by four to six diameters*; surface between punctures everywhere smooth. *Elytra* nearly three times as long as pronotum (2.05 mm. : 0.73 mm.). Surface without striae; punctate as pronotal disk but slightly more densely and irregularly so. At apical fourth on each elytron adjacent to lateral margin is an oval depression about 0.164 mm. long which is

* Sharp's (*loc. cit.*) statement that the extreme base of the thorax is free from punctuation notwithstanding.

densely and finely pubescent. *Scutellum* flat, sub-triangular, broader than long (0.164 mm. : 0.137 mm.), and surface with only an occasional fine puncture. *Prosternum* with shape as figured (Fig. 4); surface sculptured like elytra. Metasternal disk with median longitudinal line complete; surface sculptured like pronotal disk. Abdominal sternites with shape as figured (Fig. 2); apical sternite with pubescence only on anterior sides and along anterior margin; nearly glabrous (actually with a few fine, sparse hairs) region sculptured like prosternum. *Genitalia* (Fig. 7) as figured.

Type: A male in the collection of the British Museum (Nat. Hist.). Panama: Bugaba, 800–1500 ft. (*Champion*). One specimen has also been examined from Panama: Porto Bello, 1911 (*E. Schwarz*).

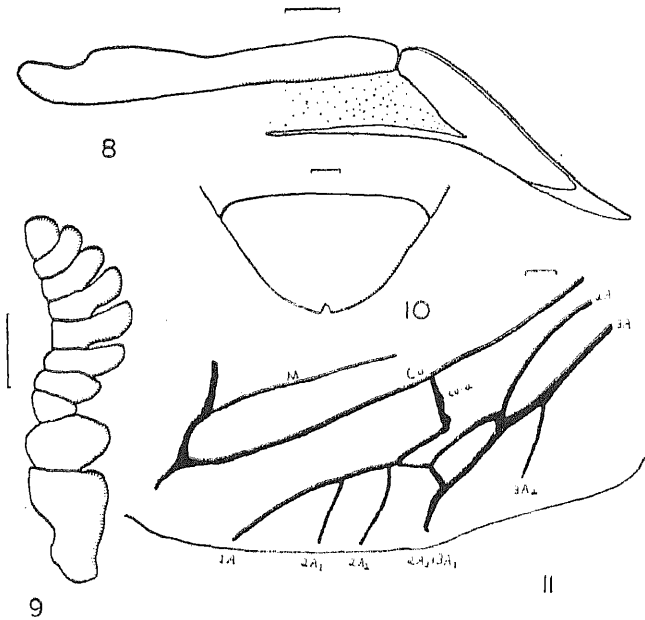
Elmoparnus glaber Grouvelle.

(Figs. 8–11.)

1889. *Helmoparnus glaber* Grouvelle, Ann. Soc. ent. Fr. (6) 9 : 164, t. 6, f. 7a, b.

Female paratype: Length, 5.0 mm.; breadth, 2.5 mm. Obovate, moderately strongly convex. Cuticle strongly shining, black to dark rufo-piceous; club of antennae, mouth-parts, and tarsi paler rufo-piceous. *Head* on each side with a very feebly elevated region extending from a point opposite middle of eye nearly to middle of head, this raised portion being densely pubescent with very long, erect hairs; middle of anterior margin between antennal bases similarly elevated and pubescent; surface densely, frequently confluent punctate with punctures which are half to two-thirds as coarse as facets of eyes. Antennae (Fig. 9) 10-segmented. Clypeus with anterior margin broadly rounded for most of its breadth, feebly sinuate before anterior angle, and anterior angle feebly rounded; surface glabrous and without punctures on all of anterior third except sides; surface elsewhere pubescent and sculptured like head. Labrum with anterior margin shallowly, arcuately, and broadly emarginate at middle; anterior angles broadly rounded; surface slightly but distinctly more coarsely and sparsely punctate than head; on each side with numerous long, erect, golden-testaceous hairs. *Pronotum* with broadest point, which is just before base, broader than long (1.94 mm. : 1.23 mm.) and base broader than apex (1.91 mm. : 1.28 mm.). Sides nearly straight, feebly sinuate before apical angles. Sublateral carinae moderately prominent, inner sides sharp, extending from base nearly to apex, and feebly and more or less evenly diverging outwards so that at apex they are only a third as far from lateral margins as at base. Surface evenly and feebly convex; middle of disk with round punctures which are slightly finer than facets of eyes and are separated usually by two diameters; towards base and sides these punctures usually become slightly finer and sparser; surface between punctures everywhere smooth. *Elytra* nearly three times as long as pronotum (3.42 mm. : 1.23 mm.) and broadest point (2.51 mm.) at about basal third. Surface with

scarcely noticeably impressed striae; punctate like middle of pronotal disk; each elytron at apical fourth against lateral margin with an oval (about 0.21 mm. long), moderately deep, densely pubescent depression which interrupts lateral margin. *Scutellum* flat, subtriangular, broader than long (0.301 mm.: 0.274 mm.), and surface punctate like adjacent part of pronotum. *Prosternum* with middle basal two-fifths and most of middle of process deeply, broadly, and longitudinally depressed; anterior margin feebly and narrowly sinuate at middle; surface punctate like pronotal disk but anteriorly



FIGS. 8-11.—*Elmoparnus glaber* Grouvelle. (8) Lateral view of female genitalia. (9) Antenna. (10) Ventral view of fifth abdominal sternite. (11) Hind wing. Venation after Forbes.

with the punctures slightly denser and the surface feebly, irregularly rugose. Metasternal disk with median longitudinal line very fine, very feebly impressed, and complete, though obsolete on anterior fourth; surface punctate like basal third of pronotum. Abdomen with middle region of first sternite longitudinally rugose; fifth sternite with most of anterior sides and all of anterior fifth densely pubescent but elsewhere nearly glabrous and punctate like middle of pronotal disk; apical middle margin of fifth sternite (Fig. 10) deeply and narrowly emarginate. *Genitalia* as figured (Fig. 8).

Male: According to Grouvelle (*loc. cit.*) the male may be distinguished from the female by having the front tibiae more strongly curved and the first three segments of the front tarsi dilated.

Type: A male in the Paris Museum.* Venezuela: Colonia Tovar, 1.ii.1888 (*E. Simon*).

I have examined two female paratypes of this species with same data as above.

Comparative notes.—This species may be easily distinguished from *E. brevicornis* Sharp in the following particulars: (1) It is much larger, 5.0 mm. : 3.1 mm.; (2) the antennae are 10- instead of 9-segmented; (3) the anterior margin of the clypeus is not deeply and broadly sinuate on each side; and (4) the sublateral carinae of the pronotum are nearly complete instead of being confined to about basal two-fifths.

NOTES AND OBSERVATIONS.

LIMENITIS CAMILLA.—It may be of interest to put on record the following data made in this district of the natural economy of the White Admiral butterfly (*L. camilla*) during the present season. In spite of the extremely tardy awakening of larvae from hibernation in the spring—the most delayed that I have ever recorded—climatic conditions throughout May were so propitious that the first appearance of this insect was well before the average date—in fact I have no earlier record during the last ten years. The date of the first appearance noted (June 11) was, however, equalled in 1937, but in that year the larvae were generally out of hibernation fully three weeks earlier than this year. Here are recorded observations:

- April 7: All larvae still fast in hibernation.
- „ 14: No change.
- „ 21: Possibly 33 per cent. of larvae are now on the move, the remainder still dormant. Only about 1 in 5 has commenced to feed.
- „ 28: All larvae now on the move and the majority feeding.
- May 4: First larva found in green stage.
- „ 15: First larva found in final moult.
- „ 21: Some larvae still in the fourth instar and quite brown yet.
- „ 28: First larva pupated.
- June 11: First imago emerged.
- „ 12: Released over a dozen imagines all emerged since yesterday.

The last three observations were made from larvae kept in confinement; all other data were from observations made in a state of nature. Although much honeysuckle was killed off during the past severe winter, larvae were fairly plentiful in this district and the brood should be quite up to average strength.—STANLEY MORRIS; Ranscombe, Fox Hill, Sturry, Canterbury.

EUPREPIA CRIBRARIA L., F. ARENARIA LEMPKE: TWO MORE BRITISH RECORDS.—Since my last note on this subject (*Entom.*, 73:

25) two more records of this insect have reached me, which should be added to the three which I then gave :

(4) In mid-July, 1914, a single example was taken on the St. George's Golf Course at Sandwich Bay by the Rev. J. W. Metcalfe, at night. It appears to conform pretty exactly to Lempke's type, being rather more heavily spotted than the specimen which I figured. It is now in Mr. Metcalfe's collection. For the tentative record then published, see *Entomologist*, 47 : 245.

(5) In 1922 Mr. H. C. Huggins saw a specimen which had just been taken, by day, at Sandwich Bay ; he does not know the name of the collector who took it. It is just possible that this specimen is the same as my (1), now in Dr. Cockayne's cabinet ; but Mr. Huggins's private opinion is that its chances of survival as a presentable cabinet specimen in its captor's hands were remote.

These two additions, both from Sandwich, do not shake my belief that this form is not indigenous with us. Mr. Huggins tells me that he worked this locality intensively some twenty years ago, both by day and night, and he is convinced that if the species had bred there he would have seen more of it.—A. J. L. BOWES ; Ripley House, Ripley, Surrey.

LASIOCAMPA QUERCUS MALFORMATION.—On August 16, 1939, I found a fully grown Oak Eggar larva on a grass stem by a Highland stream in the Island of Islay, Inner Hebrides. It was placed in a box with other larvae and spun up on August 19 and 20. A male hatched on May 10. Before its wings had formed I thought it was going to be deformed, for the left hind wing did not expand till all the others were straight. It was then I noticed that the moth had no left antenna. I looked closer and found that there was no sign of one. I thought it might have broken off when the moth was hatching, so I cut open the cocoon and examined the pupal shell. The left antennal sheath was normal, although split, but the right side (corresponding to the left on the moth) was abnormal. In the place of the sheath was a little black groove. The moth, apart from being a little bigger than the southern male, is a normal *L. quercus*.—R. LOVELL WILKS ; The Mound, Portsmouth Road, Esher, Surrey.

SPIRAL SEGMENTATION.—In addition to the records of spiral segmentation in Lepidoptera mentioned in my account of it in *S. menthastri* Esp. (*antea*, pp. 134-6), another instance in *Callimorpha jacobaeae* L. has been described by E. W. Aubrook (*J. Soc. Brit. Ent.* (1937), 1 (7) : 186-7), from a larva taken by Prof. G. D. Hale Carpenter, Hope Professor of Zoology (Entomology) at Oxford, who has kindly drawn my attention to it.—ERIC EVANS ; 144, Nicolas Road, Chorlton-cum-Hardy, Manchester.

LIBERATED BUTTERFLIES.—I quite see Mr. Paton's point regarding the introduction of insects from one area to another, and that those workers who are interested in local lists must find their records rather annoyingly complicated by such introductions, but the question might be resolved into one of values of restricted areas and artificial

boundaries fixed by one or more persons on the one hand, and on the other by people upsetting these boundaries. Inter-county boundaries are so often artificial that nature cannot recognize them. One cannot prevent the spread of species if the urge to wander exists, and such spread where it is gradual over a series of years must be due to the species itself and not to man's handiwork. Butterflies will wander. I believe that the spread of *Limenitis camilla* and *Polygonia c-album* in our southern counties the last ten or fifteen years has been due to nature. The movement has been a steady spreading, continuing from one season to another, judging from the reports sent in to me by members of the London Natural History Society, but of course these reports do not cover the whole of the southern counties, so may not be as full as could be wished.—H. J. BURKILL; 3, New-man's Court, Cornhill, E.C. 3.

THE INFLUENCE OF BIRD MIGRATION UPON THE DISTRIBUTION OF MIMETIC SPECIES OF LEPIDOPTERA: A FURTHER CRITICISM.—Dr. Rosa's reply (1940, *Entomologist*, 73 : 66) to my criticism (1939, *Entomologist*, 72 : 222) still leaves me unconvinced of the soundness of his theory. Once Dr. Rosa admits that propagation forwards or migration is responsible for the spread of a mimetic form, avian influence seems to lose all importance; it has never been suggested, for instance, that the pale female forms of the genus *Colias* have any protective significance, and yet they are found almost throughout the range of the genus. It also seems that any selective influence exercised by the migrant bird will be nullified by the indiscriminate preying of the resident species unacquainted with the model. I had not, it is true, differentiated between the three classes that Dr. Rosa now emphasizes, but that was because I was under the impression that Dr. Rosa implied that the *romulus* form of *polytes* found in Northern India had originated there and had not spread from the South.

My reference to "red female forms" of *polytes* could have been more happily expressed as "red female examples" but, as the whole discussion centred round *hector* and its mimic, I did not think that my meaning could be misunderstood. I have taken *romulus* at both Amritsar and Lyallpore, the one some forty miles east of Lahore, the other in the Canal Colonies, and I am in entire agreement with Dr. Rosa that this form occurs well outside the area inhabited by its model. I do not, however, believe that this fact has any connection with the migration of birds. *Polytes* is a conspicuous insect whatever its form, and once a mimetic form has spread into a new district it seems to me that it will survive.

Dr. Rosa does not refer to my criticism of his second pair (*Aporia agathon*—*Danaus nilgiriensis*), and I still consider it unnecessary to go many hundreds of miles to find a model when a perfectly satisfactory one flies along with the mimic. (I take this opportunity to correct a typographical error: in the bottom line of p. 222 I referred to *Delias nilgiriensis*; this should, of course, be *Danaüs*.)

As regards the last pair, I have not got my Seitz here to check the reference, but, from the context of Dr. Rosa's first paper (1937,

Entomologist, 70 : 36) it seems to come under *Danaïs aspasia*. The whole point is somewhat confused, as Dr. Rosa refers to *philomela* as a form of both *hippia* F. and *pingasa* Moore. I have never had the opportunity of collecting in Southern India, so I have no personal experience of *Valeria ceylanica* Feld. (*pingasa* Moore), but the yellow female form is evidently extremely rare; not only is it not mentioned by Evans, but Talbot makes no reference to it in the new butterfly volume in the Fauna of India series. *Valeria valeria* Cr., *hippia* F. and *V. ceylanica* Feld. are very similar, and I cannot help feeling that there may be some mistake in identification. In any case, judging from the *philomela* form of *hippia*, the yellow is not very noticeable when on the wing, and I am certain that the general Danaïne appearance would prove an adequate protection both from birds acquainted with *aspasia* as well as those acquainted with the non-yellow Danaid mimicked by the typical form.—D. G. SEVASTOPULO; Calcutta, May 27, 1940.

GOMPHUS VULGATISSIMUS L. IN SHROPSHIRE.—Some specimens of this rather rare dragonfly were collected by Mr. H. Donisthorpe at the end of May at Maesbrook, near the Shropshire-Montgomery border. Mr. Donisthorpe tells me these dragonflies were present in some numbers, and their exuviae were to be seen on the mud at the sides of the River Vyrnwy. I believe this is the first record of *G. vulgatissimus* from Shropshire and is an extension of its range northwards, the previously recognized northern limits in England being Worcestershire and Herefordshire. It has been recorded from Wales, but I do not know from which county.—D. E. KIMMINS (Dept. of Entomology, British Museum, Nat. Hist.).

RECENT LITERATURE.

IN spite of the war the Trustees of the British Museum (Natural History) have succeeded in issuing quite a number of publications of entomological interest during recent months. Of the reports on the *Ruwenzori Expedition* seven parts have appeared, namely, Carabidae (L. Burgeon), Trechinae (R. Jeannel), Staphylinidae (M. Bernhauer), Hydrophilidae (J. Balfour Browne) and Lycidae (R. Kleine) forming parts 6–10 of Vol. III, and Empididae (Garrett Jones) and Coenosiinae (F. van Emden) forming parts 4 and 5 of Vol. II. As a separate work by M. E. Mosely and Cornelius Belton, a *Catalogue of the Francis Walker Types of Trichoptera* (248 pp.) was issued on June 8, 1940. This volume contains full redescriptions of all the types which remain and are fit to describe; the frontispiece is a reproduction of a portrait of Walker. Another separate volume is a *Monograph of the S. American Weevils of the Genus Conotrachelus* (365 pp.) by K. Fiedler. Shorter publications consist of two new Economic Leaflets, No. 3, *Silverfish*, and No. 4, *Psocids*, and a completely new edition (No. 4A) of the *Instructions for Collectors: Insects* (164 pp.; price 1s. 6d.), which has been enlarged by the addition of sections dealing with the classification of insects and describing in outline the principal orders and families.

N. D. R.



Donald MacAlister, photo.

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Yours sincerely
A. C. Sountamie.

THE ENTOMOLOGIST.

VOL. LXXIII.]

SEPTEMBER, 1940.

[No. 928

MARGARET ELIZABETH FOUNTAINE.

(Plate III.)

THE subject of this memoir was the eldest daughter of the Rev. John Fountaine, sometime rector of South Acre in the county of Norfolk. She was born on May 16, 1862, and passed away on April 21 last, at the Guest House of the Monastery of St. Benedict, near the Port of Spain, in the island of Trinidad. For some time her health had been affected by shock sustained through an attack by a submarine on the ship on which she travelled across the Atlantic last autumn. On the day of her death she went for a walk, apparently in her usual health, but was found by the roadside in a state of collapse. She was assisted by a passer-by back to the monastery, where she died before medical assistance could be obtained.

Some years ago Miss Fountaine said to the writer, "I've had a lovely life. I should like to pass over quickly and in full harness!" She had her wish.

During practically the whole of her mature life Miss Fountaine was an extremely keen student and collector of the Rhopalocera of the world. Annually, since about the year 1890, it was her custom to spend several months in this pursuit. There is no doubt but that she was the most travelled British lepidopterist of this or any past date.

She was absolutely fearless, pursuing her beloved butterflies wherever they led her, entirely oblivious to the presence of any inhabitants of tropical jungles, be they lions, tigers, leopards, poisonous snakes, or what not; or that they were infected by malaria, yellow fever and other tropical diseases. She was also entirely indifferent to living on the coarsest of food and with the most primitive accommodation. On one occasion, during a sojourn at Amasia in Asia Minor, she put up with an Armenian family for many weeks, practically the only food available being eggs and rice.

Miss Fountaine commenced her collection and study of butterflies during a visit to Geneva in or about the year 1890. In 1894 she spent a considerable time at Vizzavona in the mountains of Corsica, during which she paid a visit to a famous bandit, Bellacoscia, in

his hiding-place in the neighbourhood, who she subsequently informed the writer "entertained her sumptuously." Her earlier expeditions were made to various European countries, but she gradually increased the range to include, first Algeria, where she had a serious attack of malaria, later Natal, Tanganyika, Kenya, West Africa (the Niger region), Madagascar, and Portuguese East Africa. In Asia she made expeditions to Syria and Palestine, Asia Minor, India, French Indo-China, and the Philippine Islands. She crossed the Atlantic many times, making expeditions to various parts of the United States, to Costa Rica, Jamaica (twice), Trinidad (several times), Guiana, Venezuela, and up the River Amazon. She also visited New Zealand, and for a time had a ranch in Queensland. This list of her journeyings in pursuit of her quest is no doubt not complete, but it represents all that are known to the writer.

There are many articles from her pen in this and other magazines, chiefly concerning expeditions, the earliest of which appears to be in the *Entomologist* (30:4 (1897)) and concerns the butterflies of Sicily. The more important other contributions of this kind deal with her experiences and captures in Asia Minor (*Entom.*, 1904), Algeria (*Entom.*, 1906), Costa Rica (*Entom.*, 1913), the Philippines (*Entom.*, 1925-26) and Greece (*Ent. Rec.*, 1902).

In addition to studying the perfect stage Miss Fountaine searched for ova and larvae, and painted the latter most beautifully. The only publication she made of these, so far as can be ascertained, is to be found in the *Transactions of the Entomological Society of London* (now Royal Entomological Society) for 1911 of "larvae and pupae of South African Rhopalocera," with two very beautiful coloured plates. She has left a large collection (unpublished) of these drawings, which it is understood have been offered to the British Museum (Natural History). Unfortunately the greater part of her intimate knowledge of the habits of tropical butterflies and their larvae was never placed on record.

Her collection of imagines, a very fine and extensive one, with the whole of the specimens in perfect condition, and with full data, the writer believes will be offered to the Castle Museum, Norwich.

During her earlier expeditions Miss Fountaine travelled with a devoted Syrian courier, "Bersa," who on one occasion she said saved her life, but after his death, some 15 years ago, she travelled entirely alone. In travelling abroad one came across her unexpectedly in various places. Our first meeting was at Hyeres in May, 1905. Without being aware of each other's presence we stayed in the same hotel for some days, but beyond casual remarks nothing further happened to lead to acquaintanceship. Later in the same year, in July, the writer made an expedition into Spain,

during which he spent some weeks at the well-known haunt of Lepidoptera, Albarracin, in Arragon. On arrival at the posada there he was informed that an English senorita was staying in the town "hunting mariposas." The next morning, in the Guadalavivier valley, some miles before the town, he was overtaken by a lady riding on a bicycle and carrying a butterfly net. It was Miss Fountaine. Our friendship dates from that meeting.

During the winter of 1938, returning from Tobago to Port of Spain in Trinidad, I found she was staying there. We paid quite a number of visits to the mountains around, our chief object being to obtain females of the magnificent genus *Prepona*, which Miss Fountaine was anxious to breed from ova. This was the last time we met, except on one occasion for a few minutes at the Natural History Museum in London about a year ago.

It was Miss Fountaine's custom to spend the summer months in London, naming and adding to her collection the specimens she had collected during the previous winter. When in England she was a very constant attendant at the Royal Entomological Society's meetings, her Fellowship dating from 1898.

Miss Fountaine will be greatly missed. She was very generous and of a very kindly and sociable disposition, deservedly popular and welcome wherever she went.

W. G. S.

EARLY DATES OF SUMMER BUTTERFLIES IN SURREY.—Nearly all the summer butterflies have been extraordinarily early this year, as a result of the extremes of weather. Examples of this district are: *Plebejus aegon*, June 14; *Limenitis camilla*, June 15 (fully out by June 21); *Zephyrus quercus*, July 1; *Hipparchia semele*, July 5; *Aphantopus hyperanthus*, June 29. Surely *L. camilla* on June 15 must be a record date.—H. L. G. STROYAN; Auchengray, West Byfleet, Surrey.

SECOND BROOD OF NISIONIDES TAGES.—On July 26, 29 and 31 last I took fresh specimens of *N. tages* in a lane not far from my house.—G. V. BULL; Sandhurst, Kent, August 3, 1940.

PIERIS BRASSICAE IN THE CITY.—When walking across Ludgate Circus, E.C., yesterday, I saw a man who had some sweet peas in his buttonhole. A large white butterfly settled on the bunch while he was walking, closed its wings, remained for two or three seconds and then flew away. Notwithstanding the swarms of this insect about the country, I thought the above incident in the heart of the City was worth recording.—E. J. BEDFORD; Lewes Borough Museum, Albion Street, Lewes, Sussex, July 26, 1940.

HYLOICUS PINASTRI IN DORSET.

BY A. GRANVILLE WHITE.

HAVING regard to recent references to this insect in the *Entomologist* the following notes may be of interest.

I first took *Hyloicus pinastri* in East Dorset as a single half-grown larva, found by accident on a small specimen of *Pinus sylvestris*, in August, 1933. This solitary specimen fed up to maturity, and eventually emerged in the following May as a rather small male.

Since then I have taken or observed it every year, including 1938, when I recorded my earliest date for the imago—May 28—a male and a pair *in cop.* being taken at the same time on adjacent trees. Most of the trees (*Pinus sylvestris*) in this particular group are approximately 40–50 ft. in height and the insects were taken within 3 ft. of the ground.

In my experience the freshly emerged female usually dries her wings fairly near to the ground, and I have taken many pairs *in cop.* within 2 ft. of the base of the tree, the greatest measured height from the ground for either male or female being 4 ft. 6 in. when drying.

I have never climbed trees to search for the insect, but I have observed specimens up to approximately 8 ft., and there is little doubt in my mind that they frequently rest higher up, since I have taken freshly emerged specimens at the base of large trees, the lowest branches being something over 20 ft. from the ground. It therefore seems reasonable to suppose that, as the female almost invariably deposits ova (in ones or twos) on the actual needles, she may rest after this exertion some distance from the ground.

If the female does this the male is likely to follow suit, for although I have no direct evidence that copulation takes place more than once, I have had 135 ova deposited by a captive female, the last 20 or so proving infertile.

I have found that from 11 a.m. to 2 p.m. is the best time to search for the imago, but whether there is a flight about 5 p.m., as suggested by Mr. Alfred N. Hedges in the *Entomologist* (1930, 63 : 89) I cannot say, although I have observed that bred insects show some liveliness between 5 and 7 p.m.

I have taken or observed the imago on *Pinus sylvestris* on trees of 15 ft. and upwards, but I have never succeeded in finding anything but the larva on the smaller trees. Unless there is a trunk clear of branches at the base it is extremely difficult to detect the insect, aided as it is by natural camouflage; although I agree with Mr. Andrews (*Entomologist*, 1930 : 67) that despite the camouflage

the insect can be detected by the practised eye at considerable distance when at rest on the larger trees, I question very much whether this applies to those birds which are likely to be the natural enemies of the insect, as I have seen suggested, as a reason for the comparative scarcity of *Hyloicus pinastri* in this country, although I cannot trace the reference at the moment of writing.

I once watched a night-jar chasing a swiftly moving *Hyloicus pinastri* in brilliant sunshine in Dorset, but so far as I could see through the intervening trees, the insect won at the expense of somewhat damaged wings.

The habit of the larva of pupating in practically a perpendicular position is interesting when one remembers the type of soil where the insect is found in this country. In Dorset it is most usually sandy peat, which is frequently very wet.

I once found (with the aid of gum-boots) a freshly emerged female at the base of a tree which was still submerged some inches up the trunk with flood water. As this was early June, it is probable that the pupa had been submerged for some months without hurt, and the freshly emerged insect had been able to make her way up the trunk through the water.

I observe that Mr. Hedges describes the ova when first deposited as cream in colour. This is not quite accurate, as the colour is what I should describe as bright honey with a slight mauvish tinge towards the rounded end.

After about 7-10 days the egg gradually becomes purplish, and the young larva can be easily observed in the last few days before it breaks through.

I have not seen it recorded that the young larva in the first instar has its horn divided into a prong at the point, somewhat like a minute catapult stick. This is lost at the first moult, which occurs after the larva has assumed a greenish tinge from the head downwards from eating, as it does, the tender new needles. The mature larva seems to exhibit a preference for the older needles, and in my experience does not thrive in captivity if offered young growth.

I have found, in breeding, that the greatest causes of mortality are overcrowding and earwigs. The larva, especially in the young stage, resents interference and will thresh about wildly if another essays to approach the same needle, and if removed from stale food will frequently refuse to eat and soon dies.

I have also lost many larvae by earwigs, which have even eaten their way through two thicknesses of a gauze sleeve, and which seem to attack the larvae most when moulting.

There seems to be a tendency of the average Dorset specimens towards darker and browner markings than those of Suffolk, but

although I have taken some very dark specimens, especially females, in Dorset, I have never yet seen one which approached that taken in Suffolk by the late Dr. Nash of Bedford (*Entomologist*, 1931 : 237), which I now have in my collection.

Speculation as to whether the two best known localities in this country have produced separate races will probably never be satisfied, but there seems a tendency amongst the Suffolk specimens (despite Dr. Nash's var. *unicolor* Tutt) to a lighter and a more chalky ground coloration of the wings and body than those specimens from Dorset.

Hill Top House,
Chaldon, Surrey;
April 9, 1940.

COLIAS CROCEUS IN HANTS.—It may be of interest to note that I caught a male *Colias croceus* in a clover field here to-day. They are infrequent in this part of the country.—(Capt.) ALBAN F. L. BACON; The Malt House, Burghclere, N. Hants.

COLIAS CROCEUS IN S. WALES.—On July 6, 1940, at Taff's Well, near here, I saw 3 perfect ♂ *Colias croceus* in bred condition. I have seen them on several occasions since, when I went there. On July 28, 1940, much nearer Cardiff, I saw 3 more *C. croceus* in bred condition, one possibly being a female. These are all different specimens. I reported earlier this year a ♀ *C. croceus* at Penderyn, near Brecon, on May 12, 1940, which was worn. I don't know if any others have been recorded this year, but this supports my earlier statement that they seem to have bred here and hibernated over the winter.—D. M. JEFFREYS; 36, Stallcoults Avenue, Roath, Cardiff.

[In view of the severity of last winter it seems most improbable that any *C. croceus* would have survived from last year in this country.—ED.]

LIBERATED BUTTERFLIES.—I have observed, from time to time, species which have "suddenly" occurred in my locality, and would be glad to know if any insects have been liberated near here. This morning, for example, I observed a perfect *Argynnis adippe* flying about the road and settling on the shrubs, but I have never noted this species here before. This year there has been a marked increase in the number of *Celastrina argiolus* in the locality, a species which has never been common, as far as I can remember here. Last year I observed single specimens of *Pararge aegeria* and *Colias croceus*, and I am reluctant to assert dogmatically that this is purely a natural phenomenon or proffer other suggestions. I should be glad, therefore, to know if these insects were liberated, and if so, where.—R. S. BYLES; 49, Central Road, Wembley, Middlesex, August 1, 1940.

[*C. argiolus* has been generally much commoner around London this year than for some years past. There seems little reason to suppose that *C. croceus* and *P. aegeria* and *A. adippe* were not natural occurrences, since the first may appear anywhere, and the other two are very rarely reared in captivity.—ED.]

NOTES ON THE MALE *CARAUSIUS MOROSUS* BRUNN.
AND REDT.

BY P. S. HEWLETT.

It is common knowledge that the male *Carausius morosus* is, at any rate in captivity, very rare. Step records no males in 10,000 insects reared, Miss Jackson seven males among 3000 insects, Ling Roth one in about 1000. Reproduction is normally parthenogenetic. Males have been recorded several times, but in each case the author in question says that the external morphology has been dealt with before, and usually refers to Brunner. However, it is perhaps not unfair to say that neither the description by Brunner (1906) nor that by Miss A. C. Jackson (1915) is very full. An exhaustive search of the literature failed to reveal any other description, in fact there are very few references at all to the male of *C. morosus*. The occurrence, therefore, of a male (or rather, of an insect with the morphology of a male) among 60 insects reared in 1939 was very fortunate, and enabled the following description and notes to be made.

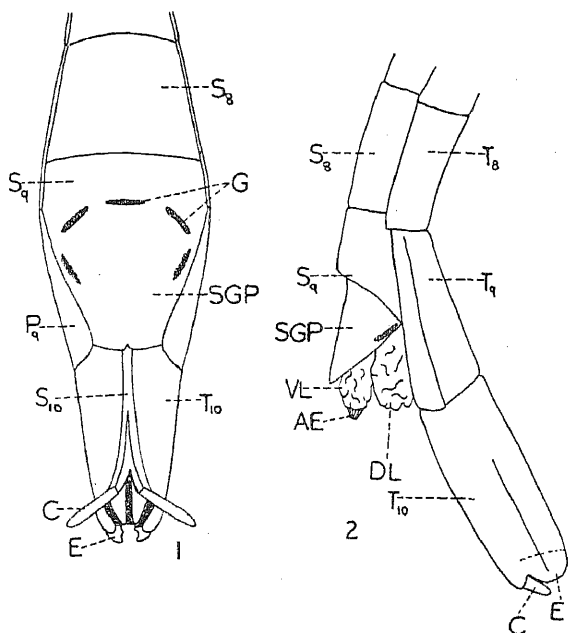
Description of the Male.

Very slender as compared with female, legs relatively much longer. Cuticle smooth, without tubercles, appearing waxen. *Head* fawn-coloured; eyes very prominent, relatively larger than in female; antennae very long. *Thorax*: prothorax short, fawn-coloured; fore leg very long. Femur with basal constriction, but this not so marked as in female, nor the inner side of constriction red as in female. Mesosternum bright red; side of mesothorax (i.e. meso-episternum and side of mesonotum) brownish yellow; meso- and metathorax similar in colour, but metanotum with two small oblique red marks, anterior to which are longitudinal yellow stripes, and becoming olive green posteriorly; both meso- and metathorax dilated at insertion of legs. *Abdomen* olive green, each segment brownish posteriorly; 8th and 9th segments, which are swollen, with brown patches dorsally and completely brown ventrally; subgenital plate very dark brown.

Measurements of Male and Female.

	Male.	Female.
Length of body	60 mm.	80 mm.
Length of antennae	42 "	37 "
Length of front leg outstretched	40 "	41 "

The external genitalia of the male.—The ninth abdominal sternum is grooved transversely and that part of it posterior to the grooves constitutes the subgenital plate. The subgenital chamber contains three soft, white, backwardly directed lobes, one large lobe and a pair of smaller ones ventral to it. All three lobes arise from the anterior wall of the subgenital chamber, and the large one is slightly sclerotized on its dorsal surface. Projecting from the inner side of the apex of one lobe (in this male, the left) belonging to the pair is a minute, hard, conical papilla, presumably a reduced aedeagus.



FIGS. 1, 2.—*Carausius morosus* Brunn. and Redt. (1) Ventral view of end of abdomen of male: (c) Cercus; (E) epiproct; (G) grooves; (s.g.p.) subgenital plate. (2) Left lateral view of end of abdomen with subgenital chamber open: (AE) aedeagus; (DL) dorsal subgenital lobe; (VL) ventral subgenital lobe.

The lobes proved to contain a milky liquid, which hardened, when left on a slide, to a transparent colourless solid. When the subgenital chamber opens prior to copulation, the lobes become distended with liquid.

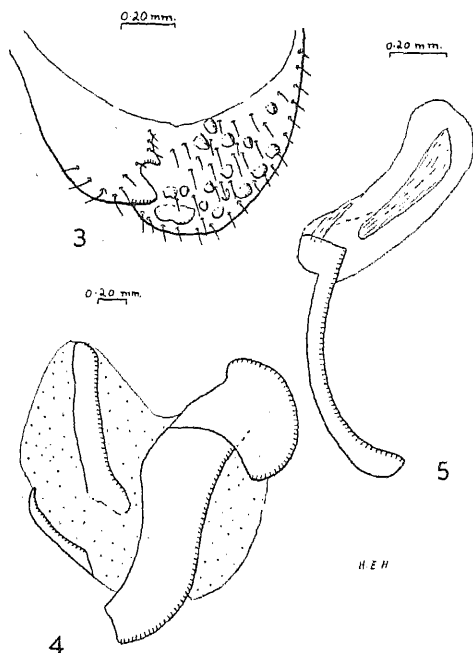
The subgenital chamber opens by the tenth abdominal segment and the ninth abdominal tergum turning up dorsally, while the subgenital plate flexes down ventrally.

The tenth abdominal segment is conical; the sternum appears

to be represented but vestigial. This segment bears the cerci, which are quite straight, and completely incapable of acting as claspers, as they do in many other Phasmids.

Pehani (1925) describes the internal genitalia, and figures a male *in coitu*.

Morphologically the insect described above was undoubtedly a male stick insect. However, Dr. M. J. D. White has suggested that it might have been a sex-reversed female, i.e. an intersex. An



FIGS. 3-5.—*Carausius morosus* Brunn. and Redt. (3) Lateral inside view of apex of tenth tergite to show setae and tubercles. (4) Ventral view of ventral phallomeres. (5) Dorsal view of dorsal phallomere.

examination of its chromosomes would have settled the point, but, especially as the insect might have been too old at the time for such an examination, to kill it seemed to be wasting the possibilities of work on the live male.

The eventual fate of this insect was an unfortunate one. It had been placed in a cage in a window, and two hours of bright sunshine, after the dull days of early summer, proved too much both for it and for the two females confined with it.

Whether this male was actually an intersex or not, in addition an undoubted intersex was reared. In this latter most of the body

showed obvious male tendencies, though the genitalia were female. The genitalia were, however, much deformed, largely due to the presence of an external blood clot, which appeared early in development, rendering surgical help necessary at moulting. The clot seriously interfered with defaecation. It seems very possible that this clot in some way upset the growth rate, producing an intersex. The fact that some of Mr. Hulls' stick insects, having normal ovaries, developed a similar clot after their last moult indicates that the clot was the cause and not the result of intersexuality in the intersex.

Many hours were spent watching the male, but it was never seen to copulate, although it would often appear to be attempting to do so. On one occasion the male opened its subgenital chamber after antennal contact with a female; on another the subgenital chamber was found open and surrounded by a green liquid, while a drop of a similar liquid rested on the subgenital plate of a female near by. The females would become active at dusk and begin feeding straight away. The male, on the other hand, wandered round the cage and over the privet, often making antennal contacts with females, and would begin feeding after the females had finished. The male did not change colour, as did the female.

In conclusion I would like to express my grateful thanks to Mr. Leonard Hulls for his continual help and encouragement, to Dr. H. E. Hinton for his additional figures (3-5) of the genitalia, and to Mrs. Hulls for criticizing the diagrams.

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 S.E. 10.

LIMENITIS CAMILLA AND POLYGONIA C-ALBUM IN NORFOLK.—These two species have settled down nicely in Norfolk since about 1933. This year I saw *camilla* at Easton on June 29, in Norwich on July 9, and quite commonly at Horsford on the following day. *Polygonia c-album* turned up in my neighbour's garden on July 7, in fair numbers at Horsford on July 10, and one worn example was noted at Whitwell on the 16th of the month.—E. T. DANIELS; 334, Dereham Road, Norwich.

BRITISH CALOPHASIA LUNULA : AN HISTORICAL NOTE.

BY P. B. M. ALLAN, M.A.

MR. RAIT-SMITH'S *Calophasia lunula* (I take it to be the *linariae* of Schiffermüller) is more interesting than his modesty allows him to suggest (*Entom.*, 73 : 111), for his capture is probably the first authentic one that has been recorded in this country. The only specimens of this insect previously reported—so far as I am aware—as having occurred in England all emanated from one Plastead, a dealer who flourished during the first two decades of the nineteenth century.

The chief scene of Mr. Plastead's exploits was Epping Forest, notably Woodside, on the northern fringe of that happy hunting-ground. Here he took *Coenonympha arcania*, *C. hero*, *Chrysophanus chryseis*, *Acontia catena*, *Calophasia lunula* and other continental species. But he worked Richmond Park and Ashdown Forest as well. Where his larva cages and puparia were situated is, of course, another matter. It was his habit to supply freshly emerged or even live specimens ; so it is likely that he bred the insects himself.

His chief dupes appear to have been John Curtis, James Stephens of the *Illustrations*, and the great Dr. Abbott ; but doubtless he was in touch with many of the members of the third Aurelian and Entomological societies, and indeed with all who were forming collections of English butterflies and moths at that time. Stephens's cabinet contained all manner of strange things and, so far as I know, Stephens never collected on the Continent. He had a dozen specimens of *Valeria oleagina* "and all of them came from Richmond Park, Surrey"—via Plastead.

This egregious merchant seems to have carried on his trade for a good many years, and as the complete list of our diurnal (and indeed nocturnal) Lepidoptera was unknown in those days, no suspicion attached to him at the time. Stephens records, without query, that the specimens of *Calophasia lunula* in his own collection and in that of the British Museum were caught at Woodside in June, 1817. Dr. Leach was in the habit of receiving, from the same locality, freshly killed specimens of *Chrysophanus chryseis* for several years in succession until the termination of the war with France in 1815. In fact he received so many that he became suspicious when Plastead refused to disclose the precise spot where they were taken, and he sent some of them to Henry Doubleday, who (living only a mile and a half from Woodside) made inquiries and was able to satisfy Dr. Leach that they were not of British origin.

This little setback, however, in no wise deterred Mr. Plastead, for he promptly opened a branch establishment in Ashdown Forest

(where he was no longer under the vigilant eye of Doubleday), and continued to supply his *chryseis* to collectors from there. Strangely enough *C. arcania* and *C. hero* followed him like faithful dogs; no longer were they to be found in Essex; Sussex was their home henceforward. But they were never found together; each had its own locality: *arcania* came only from Forest Row; *hero* was to be caught only at—or rather “near”—Withyham. For some reason, however, *hero* died out at Withyham; but happily it immediately turned up again at Lamberhurst, whence Curtis was supplied.

Dr. Abbott, another of Plasteed's patrons, seems to have been intent chiefly upon introducing North American species into Bedfordshire. At Clapham Park Wood in that county he caught *H. bucephalus*, a large Yankee skipper, and then proceeded to take *Pyrgus oileus*. Haworth saw this last “capture” and dubbed it “The Georgian Grizzle.” Did the Reverend Dr. Abbott take any other rarities? Believe me he did. He not only took *lathonia*, *podalirius*, *daphidice*, *niobe*, but many other exotics, and all in Bedfordshire. Yet he seems to have missed *Thecla spini*, which is strange, as it was a popular insect in English collections at that time. Perhaps it was too popular for the reverend doctor, who preferred rarities which other collectors did not possess.

I have no doubt at all that none of the continental moths marketed by Plasteed ever occurred in the wild state in this country. *Valeria oleagina* still appears in the text-books as a British moth. Donovan said that he caught one on the wing in July, 1800, at Fishguard in Pembrokeshire; but a more unlikely place to meet with this inland woodland species one cannot imagine. So it is probable that some mistake arose, some inadvertent substitution, as has so commonly occurred in the past. South's *Moths of the British Isles* (first series, p. 266) merely repeats Stephens's not quite accurate remarks: “Very rare; specimens have been found in Richmond Park, and one was taken in the pupa state by Mr. Plasteed some twenty or thirty years ago in Battersea Fields; others have occurred near Bristol, and Mr. Donovan, I believe, captured one in South Wales; it has also been taken in Scotland. My specimens were from the former locality, and I have been fortunate enough to have had nearly a dozen examples at various periods.” Unhappily Stephens omitted to mention that he had never taken the species himself, and I can find no evidence of any authentic specimen having ever been taken in either Bristol or Scotland. Old cabinets in both these places may well have contained the insect; for Plasteed probably found it a good “line,” and doubtless despatched specimens to his customers in various parts of the country. But when Plasteed died out *V. oleagina* did

likewise, and never since has it appeared in these islands. Which is a pity, for it is a fine upstanding moth.

In those early days of collecting, when the list of our insect fauna was being increased every year, the cards were all in the dealers' hands. They had only to set up their larva cages in a suitable locality and who was to challenge their "discoveries?" Indeed the only check on their activities was the difficulty of obtaining ova or pupae of suitable species from abroad. That *oleagina* and *lunula* were not broadcast in greater numbers was probably due to difficulties in rearing the larvae or to Plastead's inability to obtain a pairing. Toadflax, *lunula*'s food-plant, is not universally abundant, and Plastead may have got tired of having to walk further and further every day to obtain a supply. *Oleagina* is not a common moth anywhere abroad, and further stock may not have been forthcoming. But he seems to have had no difficulty with butterflies.

With regard to Mr. Rait-Smith's claim that his capture was "undoubtedly bred here" because it "is in perfect condition," I hate to be a wet blanket, but I have now gone still further than I did in an article on this subject in *The Entomologist's Record* (December, 1938, pp. 157-9). I hold that the fresher the condition, the greater the likelihood of immigration. A *Noctua* born and bred in England usually damages its fringes the first night of its life by barging about the herbage, hedges and trees in its search for honey-dew or a female. A moth that is possessed by the instinct to migrate (which is the wrong word; moths do not "migrate" as the zoologist knows migration; they "vagate"), soars almost as soon as its wings are dry*; the very first flight that it makes is the flight that carries it across the sea. So it arrives in England "in perfect condition," and, being tired, goes to sleep where it alights. And perhaps the moment it awakes next evening, rested but very hungry, it smells a patch of treacle spread by some marauding entomologist.

All Continental moths and butterflies captured in this country "in perfect condition" are—'tis a hundred pounds to a penny—immigrants.

However, if Mr. Rait-Smith is concerned (and, being a scientific entomologist, I am perfectly certain he isn't) whether his moth was hatched at Dover or at Calais, he can acclaim it as a very superior moth indeed—no mere country bumpkin, but an adventurer of the Drake and Raleigh brand.

No. 4 Windhill,
Bishop's Stortford, Hertfordshire.

* I have seen this with *Pieris brassicae* and *Plusia gamma*, and have read and been told of several other instances with other species.

SOME NOTES ON THE CYNIPID GENUS *ANDRICUS*.—I.

By M. NIBLETT.

THE following notes are intended to record my observations of the occurrence of the galls and attempts to breed out the insects of some species of the genus *Andricus*. All localities are in Surrey unless otherwise stated.

Andricus radialis Fab.—The galls of this species have not been observed to occur so plentifully during the past few years as they did in previous ones. On *Quercus robur* L. I have found them at Limpsfield Chart, Epsom Common, Park Downs, Ashted Common, West Wickham Wood, Banstead, Wimbledon Common, Bookham Common, Arbrook Common, Coulsdon Common; and Bostall Heath, Kent. On *Q. sessiliflora* Salb. at Headley, Addington, West Wickham Wood; also at Lessness Abbey Wood, Kent. The galls usually occur at the base of the trunks of the larger trees, but on one occasion I found a *radialis* gall 6 ft. above the ground level; it is not usual to find many of these galls clustered together, but in May, 1928, on an exposed root I counted 18 good-sized galls. The gall-wasp I have had emerge in March and April with Synergi in April, May, June and July. I have had very few Chalcids emerge from these galls; only 7 have emerged from galls, which gave me 19 *radialis* and 111 Synergi.

A. trilineatus Htg.—As I have previously stated (1) I have failed to find the twig galls of this, the alternate sexual generation of *radialis*. The galls on the midrib of oak leaves I have found in about eight localities from June 2 to October 10, but never in any numbers, and in every case the insect has failed to emerge.

From the secondary galls in those of *A. fecundatrix* the results were more satisfactory. From a series of *fecundatrix* galls 48 in number collected at Brockenhurst, Hants, on 6.viii.38, one ♀ *trilineatus* emerged, 26.viii.38. From 37 galls from Worms Heath taken 10.ix.38 I had the following *trilineatus* emerge: On 9.x.38, 4 ♀♀; 16.x.38, 2 ♀♀; 6.xi.38, 1 ♀; from 10 galls taken at Croham Hurst, 17.ix.38, 1 ♂ emerged 9.x.38; from 26 galls from Coldharbour Common 8.x.38, 2 ♀♀ emerged 6.xi.38; and from 2 galls taken on Merrow Downs 10.viii.39, 2 ♂♂ emerged on 18.viii.39. In several of these localities and others where *fecundatrix* galls have been plentiful, I have searched for the twig galls in the winter when the old galls should not be difficult to spot if there, as the emergence holes of the gall-wasp would denote their presence, but so far without success, and I know of only one instance in recent years of the twig gall of this species being found.

A. albopunctatus Schlect.—The galls of this species do not usually occur in any great numbers, but if one is seen, a search of the same or adjoining twigs will generally disclose several more. On *Q. robur* I have found the gall at Epsom Common, Limpsfield Chart, West Wickham Wood, Bookham Common, Park Downs, Coulsdon Common, Epsom Downs, Burgh Heath, Ranmore Common, Mickleham, Effingham Common, Oxshott Heath, Arbrook Common, Walton Heath, Banks Common, and Boxhill. On *sessiliflora* at Worms Heath, Croham Hurst, Banstead Wood, Addington and Friday Street; also at Bostall Heath and Lessness Abbey Wood, Kent. The earliest date I have found this gall is April 9.

Considering the size of the gall it is rather astonishing the number of insects (other than the gall-wasp) they yield. I have had emerge 129 Synergi and 29 Chalcids from the galls I have collected. From 5 galls taken at Lessness Abbey Wood 22.v.37 I had 3 *albopunctatus* emerge 17.iii.38 and 1 on 19.iii.39; from 38 galls taken from the same locality on 14.iv.38, 1 *albopunctatus* emerged 13.iii.40 and another 19.iii.40, no other insects emerging. From 22 galls taken at Coulsdon Common 18.vi.38, 31 Synergi emerged during June and July of that year, 28 Chalcids in July and 1 *albopunctatus* on 19.iii.39. The above times of emergence do not agree with any of those given by other authors. Adler (2) had the insects he bred emerge in April, and I have a very strong suspicion that this date has been copied by others following him without their doing any breeding themselves. The Abbey Wood galls were from *sessiliflora*, those from Coulsdon Common from *robur* and the former were frozen solid this spring (1940).

A. seminationis Adl.—The peculiarity about these galls is in connection with the considerably swollen catkin stalks from which they develop, also the lengthy period they persist in a fresh condition; I have found these swollen stalks with no galls yet visible at the beginning of May and as late as August 20 still green and unshrivelled. The earliest date I have found this gall is May 14, the latest August 8. As a rule the galls that remain attached during the summer are infested by inquiline larvae.

I have found the galls on *Q. robur* at Epsom Common, Limpsfield Chart, Bookham Common, Fetcham Downs, Ashted Common, Burgh Heath, Arbrook Common, Walton Heath, Coulsdon Common, Boxhill, Banks Common, Epsom Downs, Dunley Hill and Merrow Downs; also Epping Forest, Essex. On *Q. sessiliflora* at Banstead Wood, Croham Hurst and Addington Hills.

Many of these galls contained Synergi larvae. From 40 taken 26.vi.37, 20 Synergi emerged in the following July and 2 *seminationis* on 17.iii.38; 30 galls were collected 10.vii.37; from these 24 Synergi emerged in the same month. From 20 galls collected on

22.vi.38, 1 *Synergus* emerged in July and 1 *seminationis* 22.iii.40; 3 galls were found 10.vi.39; from these 1 *seminationis* emerged 22.iii.40 and another on 24.iii.40.

Again my emergences are somewhat earlier than those recorded by Adler, and April is given by other authors with suspicious regularity.

A. quadrilineatus Htg.—The catkin gall of this species is usually to be found in considerable numbers. My records from 1927 give fairly plentiful to plentiful for each year except 1935. I have no records for this year. There was a severe frost in May which destroyed the oak catkins in many districts. I found numbers of the galls the following year; these of course may have been produced by *quadrilineatus* which had been laying over for another year—that is, they may have been the product of 1934 galls. The earliest date I have found the gall is May 7 and the latest July 1; as a rule the galls remaining late on the catkin stalks are infested by parasites.

On *Q. robur* I have found these galls at Ranmore Common, Limpsfield Chart, Epsom Common, West Wickham Wood, Bookham Common, Friday Street, Ashtead Common, Epsom Downs, Burgh Heath, Coulsdon Common, Walton Heath, Boxhill and Banks Common; on *sessiliflora* at Croham Hurst, Worms Heath, Addington Hills and Banstead Wood; also Lessness Abbey Wood, and Bostall Heath, Kent.

All the *quadrilineatus* I have bred have emerged in March except on one occasion, when four emerged on April 1. The majority of these insects I have had emerge in the second year, but have had a few emerge in the third. I have found the same as others have that parasites take a heavy toll of the gall-wasp larvae. In the spring of 1938 and of 1939 I collected 596 galls of this species, and although the emergences of parasites from them have been well below the average, those of the gall-wasp have been small, only 25 *quadrilineatus* having emerged up to now (April, 1940).

A. fecundatrix Htg.—The galls of this species usually occur with considerable frequency. I have found them each year since 1925 in some numbers, excepting 1929 and 1932, when I could not find many. On *Q. robur* I have found them at Limpsfield Chart, Banks Common, Epsom Common, West Wickham Wood, Mickleham, Bookham Common, Barnthorne Wood, Ranmore Common, Addington Hills, Park Downs, Oxshott, Farthing Down, Effingham Common, Woodmansterne, Ashstead Common, Boxhill, Woodcote, Worms Heath, Leatherhead, Arbrook Common, Riddlesdown, Colley Hill, Ockham Common, Walton Heath, Coulsdon Common, Mugswell, Burgh Heath, Epsom Downs, Chipstead, Coldharbour Common, Banstead Downs, Dunley Hill and Merrow Downs; also Brockenhurst, Hants; and Ashdown Forest, Sussex. On

sessiliflora at Addington, Croham Hurst, Friday Street, East Horsley, Banstead Wood, West Wickham Wood, Ranmore Common and Worms Heath; also Lessness Abbey Wood, Kent.

The earliest date I have found this gall is July 13—that is of course fresh galls; old galls often remain attached to the twigs until the following summer. The inner gall, if it reaches maturity, has usually fallen out before the end of September, but often when containing larvae of Synergi or Chalcids it remains in the outer gall until much later, or even may not leave it at all.

The percentage of *secundatrix* I have had emerge has been very small. From a number of galls taken 2.viii.30, 1 gall-wasp emerged 8.x.30 and 3 on 20.iii.31; from some galls taken 4.ix.37, 2 emerged 5.iv.39; from 26 galls collected 8.x.38, 29 Synergi and 25 Chalcids emerged during the following May and June; while from 5 galls taken 29.x.38 the yield was 11 Synergi and 3 Chalcids—a very good reason for the non-survival of the gall-wasp larvae. The times given by other authors for the emergence of *secundatrix* are November of second and April of second and third years.

A. pilosus Adl.—The gall of this, the alternate sexual generation of the last-mentioned species, I first found in 1927, but failed to find the gall again until 1939, when an intensive search revealed its presence on *Q. robur* at Ranmore Common and Walton Heath; on *sessiliflora* at Croham Hurst and Worms Heath; also at Lessness Abbey Wood, Kent. From all these galls *pilosus* emerged freely between May 20 and June 4, 41 of the gall-wasps emerging altogether.

I am rather at a loss to suggest any definite reason for my failure to find this gall for so many years, taking into account the very large number of catkins examined during the period in localities where the galls of the alternate generation had occurred freely. It would be difficult to mistake the gall for that of some other species, the rather long white hairs with which the surface is adorned being very distinctive. I rather think that this gall matures rapidly and soon drops; all the galls were found between May 7 and 21.

A. ostreus Gir.—The galls of this species I have found to occur quite plentifully on both *Q. robur* and *sessiliflora* wherever these oaks grow; all the localities given for other species apply here. In 1934 and 1935 there was a very noticeable reduction in the numbers of these galls in most localities visited during that period; during the following years the numbers observed showed a steady increase, but they have not appeared in such numbers as they did before 1934.

The galls vary somewhat in size and coloration, and are frequently the abode of larvae of Synergi and Chalcids. The earliest

date on which I have found this gall is June 3 and the latest, still attached to the leaves December 3.

I have had *ostreus* emerge in October, November, December, and on one occasion a belated specimen emerged in the following March; one of four that emerged in December was entirely devoid of wings though normal in all other respects. The number of gall-wasps emerging from galls I have kept is 24, against 79 Synergi and 26 Chalcids, these from several hundreds of the galls. Adler apparently had this species emerge in March, but I am of the opinion that these delayed emergences are unusual.

I have observed upon a number of occasions Synergi ovipositing in these galls in September.

A. furunculus Bey.—The gall of this species, the alternate sexual generation of *A. ostreus*, is undoubtedly frequently overlooked; it is a small gall hidden by the bud-scales, the gall-wasp emerging in May. If searched for it should be found in all districts where *ostreus* has occurred in the previous autumn and upon both *robur* and *sessiliflora*. April 14 is the earliest date I have found the galls and May 21 the latest, with the insect still in them.

The insect I have had emerge freely from April 24 to May 26, and have observed it ovipositing in leaf veins in early June. My experience with this species is that it is very free from the attacks of parasites. I have bred in all 119 *furunculus* and only 2 Chalcids from the same series of galls.

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- 10, Greenway,
Wallington, Surrey.

MIGRATION OF LARGE WHITE BUTTERFLIES OBSERVED AT HILBRE POINT, HOYLAK, CHESHIRE.—On May 21 the large white butterfly was observed in great numbers flying towards Hilbre Island during the late afternoon and early evening. The butterflies were seen reaching the west side of the island, especially towards the north end, flying inwards from the sea from the direction of the Welsh coast. They were all flying steadily in the same direction, and were not seen to settle anywhere. They did not seem bedraggled or tired. They were flying at a height varying from 4 to 10 or 20 feet. It was a calm sunny day with no appreciable wind. Evidently this was the arrival of a migratory swarm such as has been observed arriving on the coasts of the British Isles towards the end of May, or else represented a local movement. Enormous numbers of butterflies were seen as it was possible to count a hundred in a few minutes, and this was done many times.—HELEN BLACKLER; Free Public Museums, Liverpool, August 7, 1940.

A NOTE ON THE SPECIES "*EUSTHENIA THALIA* NEWMAN" AND "*EUSTHENIA DIVERSIPES* WESTWOOD" (PLECOPTERA).

BY D. E. KIMMINS,

Department of Entomology, British Museum (Nat. Hist.).

THROUGH the courtesy of Prof. G. D. Hale Carpenter, I have been able to examine the type series of Newman's *Eusthenia thalia* (now placed in the genus *Tasmanoperla*). In his description Newman says that there are four examples in the collection of the Rev. F. W. Hope. Over the label "*thalia*" there are now five specimens, four females (two with labels "*Eusthenia thalia* Newm."), and one male with two labels, "R. Lewis, V.D. Land" and "*Eusthenia (diversipes)* Westw. Intr. V2) *thalia* Newm."

His description says "the wings of the female are abbreviated occasionally (but not invariably) in the same manner as those of the male in the British species of the restricted genus *Perla*." Two of the females come into this category. He also says that "a series of testaceous spots extends along the costal margin of all wings, and round the extreme tips"; this is true of the females but not of the male, in which the costal area, particularly of the hind wing, is largely pale.

Taking into account the fact that *thalia* was published in January, 1839, and *diversipes* not until 1840, there is justification for assuming that the male is not one of the original type series. As there appears to have been no selection of holotype, I designate the expanded, fully-winged female as holotype, leaving one fully-winged female and the two brachypterous females as paratypes.

Turning now to *Eusthenia diversipes* Westwood, Tillyard (1921, *Canad. Ent.*, 53: 41, fig. 3) believed this name to be a *nomen nudum*, as the name had been mentioned by Walker and other authors without reference. I was under the same impression until the label on the male in the Hope collection gave me a clue. Eventually, in Westwood's *Introduction to the Classification of Insects*, 2: 22, I found the following footnote:

"In a beautiful species from Van Dieman's Land, which I have received from Mr. R. H. Lewis, the females are occasionally furnished with only short wings. One thus constructed, in the collection of the Rev. F. W. Hope, has a bundle of eggs still attached to the extremity of the abdomen. (*Eusthenia diversipes* W.)."

Admittedly this is not much of a description, but from it emerges the fact that the females of *diversipes* are occasionally brachypterous, and that such a female was one of his co-types, and that it was in the Hope collection. No specific reference is made to a

male, but one of the short-winged female paratypes of *thalia* still has a small bundle of eggs, now attached to a card below the specimen.

Under these circumstances I feel that a strong case can be made out for accepting this female as the type of *diversipes*, thus reducing Westwood's species to a synonym of *thalia*, and considering the male to have been mis-identified by Newman. It certainly differs specifically from the female mentioned by Westwood, and belongs to the species named *diversipes* by Tillyard. *Tasmanoperla diversipes* Tillyard being preoccupied by *T. diversipes* (Newm.), I propose to re-name it *Tasmanoperla tillyardi* **nom. nov.** The two species would then stand as :

(1) *Tasmanoperla thalia* (Newman).

Eusthenia thalia Newman, 1839, Mag. Nat. Hist., 3 (N.S.) : 33.

Eusthenia diversipes Westwood, 1840, Intro. Class. Ins., 2 : 22, footnote. **Syn. nov.**

Pteronarcys thalia (Newm.), Pictet, 1842, Hist. Nat. Nevrl., Perlides : 132.

Eusthenia thalia Newm., Walker, 1852, Cat. Neur. Ins. B.M., 1 : 139.

Austroperla thalia (Newm.), Banks, 1913, Trans. Amer. Ent. Soc., 39 : 203.

Pteronarcella thalia (Newm.), Samal, 1921, Casopis, 18 : 59, 70.

Tasmanoperla thalia (Newm.), Tillyard, 1921, Canad. Ent., 53 : 41.

(2) *Tasmanoperla tillyardi* **nom. nov.**

Tasmanoperla diversipes Tillyard, 1921, Canad. Ent., 53 : 41, fig. 3.

NOTES AND OBSERVATIONS.

DEILEPHILA GALII IN IRELAND.—I wish to report the capture of a specimen of *Deilephila galii* Schiff. (*galii* Rott.) at Ummera, Co. Cork. This sphinx moth was taken by my sister, Mrs. G. E. Lucas, at the flowers of red valerian in her garden at Ummera House on the night of July 17. She sent me the moth and there is no doubt of its identity. The previous records for Ireland are, two specimens taken by Mr. Coulter on the Dublin coast (Greene in his List for 1854), and one at Howth, on the same coast, by Dr. G. V. Hart in 1888 (Kane).—C. DONOVAN, Lt.-Col. I.M.S. (retired); Bourton-on-the-Water, Glos, July 23, 1940.

A REMARKABLE ABERRATION OF *CALLIMORPHA DOMINULA*.—Early last month I bred from 35 larvae I found wild a most unusual variety of the Scarlet Tiger. The normal glossy black of the fore wings is replaced by grey brown with an orange suffusion near the base of the wings, while the cream spots are enlarged somewhat and run together with confused outline. The hind wings are more extraordinary as the usual black markings are absent, but their contour is just discernible in brown against the red background.

There is also no central black band on the body.—C. G. M. DE WORMS; Milton Park, Egham, Surrey, July, 1940.

LIBERATED BUTTERFLIES.—With reference to the correspondence on the liberation of butterflies, I have previously given it as my opinion in the *Entomologist*, and elsewhere, that the introduction of foreign species with the object of liberating them in this country is an unwise and disturbing undertaking, as it completely upsets all the work that is being done relating to the study of migration and carefully collected records by scientific societies and naturalists generally. As regards the *Araschnia levana* which were turned down in Monmouthshire many years ago, and referred to by the Rev. Wheeler as having been destroyed by the "vandal" as he terms him, I should like to point out that I happened to be staying shortly afterwards with the "vandal," who was recognized as one of the leading British entomologists, and none other but the late A. B. Farn. He told me that directly he was informed of the liberation of *A. lerana* he went to the locality and caught all he could purposely to destroy them, as he was greatly opposed to the introduction of anything foreign to either the fauna or flora of this country.—F. W. FROHAWK; July, 1940.

LIMENITIS CAMILLA AND OTHER BUTTERFLIES IN LONDON.—*Limenitis camilla* continues to extend its range and it now encircles London. It has recently been recorded from Wimbledon, and to my knowledge is established in Epping Forest, Radlett, and a private wood at Mill Hill. It has now made a small invasion of London itself. On July 19 my son, on alighting from a trolley-bus in Finsbury Square, saw one sail by him open-winged in its characteristic flight. As it was only some two feet from the pavement he had a good view of it, and it appeared to be in good condition. Another was seen by a reliable observer, who knows the species well, in Great Portland Street on the following Wednesday. This makes the fifteenth species of butterfly that I can vouch for in the City of London (including the Temple Gardens). All these I have seen myself, and I have been told of *Polygonia c-album*, but that I was unable to verify. The other fourteen which extend over many years are: *Vanessa atalanta*, *V. cardui*, *Aglais urticae*, *Nymphalis io*, *N. polychloros* (nearly forty years ago), *Polyommatus icarus*, *Celastrina argiolus*, *Argynnis paphia* (a very ragged male in the Temple Gardens), *Pieris brassicae*, *P. rapae*, *P. napi*, *Colias croceus* (1911), *Lycaena phlaeas* and *Gonepteryx rhamni*—nearly a quarter of the British list.—RUSSELL JAMES; Lynton House, Bishopswood Road, N. 6, August 5, 1940.

LARVAE OF PAPILIO MACHAON FOUND IN SUSSEX AND KENT.—After a specimen had been seen flying in a flower garden at Hastings on May 31, 1940 (A. M. Elliott), in early July larvae were found on carrots in cultivated gardens in three localities, namely, at Starr's Green, near Battle, from which four (both sexes) emerged on July 30 (Major E. N. T. Collins); at Hailsham, from which there was

also an emergence on July 30 (G. J. Eade); and at Wye, in the S.E. Agricultural College garden, where several were found and reared (S. G. Jary, *Entomologist*). For nearly a century *P. machaon* has been considered very rare in Sussex. In 1934/35 a few stray specimens were recorded (*Entom.*, 67 : 239 and 68 : 211), which may have come from their habitat in the Fen country or possibly from France. Immigration has not been noticed since 1900, but as the species is usually common each summer in the clover fields near Rouen [and in the neighbourhood of Lens—ED.], some may come over to England, so it is important to record releases to distinguish them from vagrants. Although the favourite food-plant, Hog's Fennel, is now rare in Sussex, the Wild Carrot and Angelica are very common and suitable substitutes.—(Capt.) T. DANNREUTHER; "Windycroft," Hastings, Sussex, August 10, 1940. [See also the following note.—ED.]

PAPILIO MACHAON IN SUSSEX.—On July 30 Maj. E. N. T. Collins, of Battle, Sussex, drew my attention to some Swallow-tail butterflies (*P. machaon*) which he had reared from caterpillars found feeding on carrots in his garden. Four of these creatures emerged in a small box where they unfortunately damaged themselves slightly. One escaped, and the other three were presented to the Hastings Museum. The eggs were probably laid in May or June, and this fact helps to substantiate a doubtful report of a Swallow-tail seen at Hastings last May.—D. W. C. DOWNEY; Public Museum and Art Gallery, John's Place, Cambridge Road, Hastings, August 2, 1940.

ORIA MUSCULOSA IN WILTSHIRE.—Fired by Cockayne and Kettlewell's account of their adventures with *Oria musculosa* in 1939 (*Ent. Rec.*, 52 : 37), and luckily having a few days free at the proper time, my wife and I set off for Salisbury on August 1, a fine and sunny day. When some twelve to fifteen miles north of the town we stopped about 3 p.m. alongside a wheat field which was in the process of being cut and asked if we might follow the reaping machine. We were met with good-natured tolerance, and two minutes later out flew a whitish noctuid somewhat resembling *Leucania pallens*. To my delight I saw in my net a fine ♂ *musculosa*, and this proved the start of a deluge. In this field we netted moths so fast that I used two nets, leaving one on the ground for my wife to box the occupant or occupants, as sometimes two came out together. When the field was finished about 4 p.m. we had netted over 30 specimens, though some had suffered somewhat from the harvesting machine. After tea in an adjoining field we saw another twenty. Next morning, August 2, we tried our luck on the outskirts of Salisbury and here found the moths again, though not so plentifully, as between 11 a.m. and 7 p.m. we secured between fifty and sixty moths—quite hard work, as every time a moth was caught we got left behind and had to catch the machine again.

We also found a number of *L. pallens* which could be distinguished by its stronger and more determined flight, *O. musculosa* rarely flying far and sometimes not at all, merely fluttering to the nearest wheat

stem. It was difficult to make out just where the moths were sitting—mostly low down, I think, though on two occasions I struck at moths flying fairly high among the wheat and each time found two moths in my net. Though we tried in the same field, as yet unfinished, with Dr. de Worms that night, not a moth was to be seen at dusk, in spite of apparently excellent conditions. Next day, however, he found them in five different fields in the immediate neighbourhood, and I have no doubt that they are equally plentiful throughout the district. We took both sexes and moths seemed more plentiful towards the centre of the field, perhaps driven in like the rabbits, which also appeared in plenty. In the only field in which we were present at the start we got several on the first round and distinctly less thereafter. It would appear that the local habit of growing different crops not separated by hedges favours the spread of this moth which evidently flies from crop to crop and from the number of females which appeared in the centre of large fields while no moths at all could be disturbed from the grass edge, it appeared to us that ova must be laid low down at the wheat stems or on the stubble. The best two fields we visited had been under vetch and grass respectively last season and in neither case was there any extensive stretch of coarse grass close by. I have kept a number of females and have obtained a batch of ova which may perhaps settle the vexed question of whether or not this insect hibernates in the larval state. This method of collecting this species was first tried by Mr. Caleb Gater and appears the most successful. Fortunately we had our moths with which to overcome local incredulity.—AUSTIN RICHARDSON; Beadesert Park, Minchinhampton, Glos.

HEMIMENE AERATANA PIERCE IN GLAMORGAN.—Between June 3 and June 30, 1938, I netted eight examples of this species whilst they were flying along a hedge-bank at Taff's Well during evenings. Meyrick remarks "Locality unrecorded (Coll. Threlfall); not recognized elsewhere." Mr. Pierce has identified my specimens.—W. E. Cox, F.R.E.S.; 279, Albany Road, Cardiff, July 17, 1940.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 2, 1940.—The President in the Chair.—Mr. S. R. Ashby exhibited a large number of aquatic Coleoptera and Hemiptera. Of the former he called attention to the red ab. *solieri* of *Agabus bipustulatus*, *Dytiscus lapponicus* from the I. of Mull, a pair of the rare *Spercheus emarginatus* taken by the late Mr. Billups at West Ham, etc.; Dr. G. V. Bull showed suffused brownish forms of *Biston strataria* bred from Ashridge; Mr. August, a female *Lycia hirtaria* and ova from Hyde Park; Mr. Wakely, several Pyralidae whose larvae are aquatic, *Acentropus niveus*, *Nymphalis stagnata*, *N. stratiolata*, *Cataclysta lemnata*, *Hydrocampa nymphaea*, and also the "fire brat" *Thermobia furnorum*; Dr. K. G. Blair, numerous sea-shore insects, including the Coleoptera *Aepus bonnairei*, *A. robbini*,

Microlymnus brevipennis, and the chelifer *Obisium maritimum*. Dr. Bull gave notes on his collecting experiences of last year, 1939.

April 25, 1940.—Mr. J. O. T. Howard, Vice-President, in the Chair.—Mr. S. Wakely exhibited *Elachista cinereopunctella* with larvae pupae and from leaves of *Carex glauca*, from Riddlesdown, Surrey; Dr. G. V. Bull, examples of *Ortholitha mucronata* Hufn. (*palumbaria* Schiff.) from Rannoch, Aviemore, N. Forest and Ashdown Forest, and the newly described *O. scotica*; Mr. J. A. Stephens, Coleoptera taken in Cobham Park, Kent, viz. *Geotrupes typhoeus* from earthcast of rabbit holes, *Platypus cylindrus*, abundant under bark of tree stumps, *Prionus coriarius* from ash trunk, not common, *Liodes cinnamomea*, rare, and *Throscus carinifrons*, from under oak trees with the last. Observations on the season up to the date of meeting were communicated by several members, including a list of first dates of appearance of numerous species of spring Lepidoptera made by Capt. R. A. Jackson, mainly at Bishops Waltham, Hants.

May 9, 1940.—Dr. E. A. Cockayne, A.M., F.R.C.P., F.R.E.S., President, in the Chair.—Mr. G. A. Davis, 76, Station Road, Chisford, and Mr. W. O. Steel, 16, Upsdell Avenue, Palmer's Green, N. 13, were elected members.—Mr. Andrews exhibited two species of spring Diptera, *Gonia fasciata* Mg. and *Chilosia grossa* Fln.; Mr. S. N. A. Jacobs, a long series of *Lithocolletis sylvestra* bred from mined maple leaves collected at Downe, Kent; Mr. Eagles, the Coleoptera *Hylobius abietis* and *Thanasimus formicarius*, taken at newly-cut pine stumps at Effingham, May 4, 1940, with shoots of pine attacked by larvae of *Evetria buoliani*; Mr. S. Wakely, a pupa of *Hesperia malvae* from a larva on Agrimony and some Agrotids. Dr. G. V. Bull and Mr. J. O. T. Howard also exhibited Agrotids, and Dr. Bull also exhibited a grey-marked *Lycia hirtaria* and reported on the abundance of *Euchloë cardamines* and *Lycaenopsis argiolus* in W. Kent this spring; Mr. E. E. Symms, an apparatus he had made to induce wild bees to make their cells so that the habits of the cell-making species could be easily observed. An interesting discussion on Agrotids introduced by Mr. Hy. J. Turner then took place, and the President and Baron de Worms gave details of the distribution and variation of the species they had met with in the field.

May 23, 1940.—Mr. J. O. T. Howard, Vice-President, in the Chair.—Mr. F. D. Coote exhibited ova of *Hamearis lucina* and of *Callophrys rubi* laid in the tip shoots of *Helianthemum*; Mr. V. August, a larva of *Apatura iris* from Sussex; Mr. T. R. Eagles, young larvae of *Lycaenopsis argiolus* on buds of *Cotoneaster*; Mr. W. H. A. Hams read notes on the early stages of *Stauropus fagi* and showed various lepidopterous larvae with parasites; Mr. A. Bliss exhibited a larva of *Crocallis elingvaria* unusually marked on the abdominal somites, and a larva of *Eilema lurideola*; Mr. S. N. A. Jacobs, a pest of stored and growing grain, *Sitotroga cerealella* Oliv.; Mr. S. Wakely, larvae of *Semiothisa brunneata* from Blair Athol; and Mr. E. E. Symms, alate and apterous forms of *Microdon eggeri* Mik. (Dip.) and discussed the development of wings in this species.—HY. J. TURNER (*Hon. Editor of Proceedings*).

THE ENTOMOLOGIST.

VOL. LXXIII.]

OCTOBER, 1940

[No. 929.]

LYSANDRA CORIDON: ITS REPUTED OCCURRENCE IN LANCASHIRE AND WESTMORLAND.

BY ALBERT E. WRIGHT, F.R.E.S.

IN writing up the variation of the Blues I have come across various references of *Lysandra coridon* having been taken in our area. The places definitely stated are Grange-over-Sands and Warton Crag, near Carnforth, both in North Lancashire; Arnside, and near Milnthorpe in Westmorland. I give below all the evidence I can find both for and against their admission. My investigations started first with Stainton's *Butterflies and Moths*, published 1857. This work mentions various districts where the author knew the butterfly occurred, but the most northern of his localities were Peterborough in the east and Bristol in the west, all other localities being on the South Coast and Isle of Wight. In Morris's *British Butterflies* (1870 edition) the localities given are mostly southern, but there are a few midland records, the most northerly being "one was taken near Knowle, Warwickshire." Then comes a reference to North Lancashire, in this curious quotation: "'Downs,' near Hunstanton, Norfolk, as Mr. Robert Marris has informed me; so too at Grange, in Lancashire."

In Newman's *British Butterflies* (1885) the following localities are given: Grange (Alfred Owen); abundant at Arnside in Silverdale, more especially about Arnside Tower (J. B. Hodgkinson); Westmorland; rough fields near Beetham, and Milnthorpe, in August (J. B. Hodgkinson).

Coleman (1860) says, "At Grange, North Lancashire, it is the commonest Blue, not on chalk, but limestone." Duncan's *British Butterflies* gives no reference to any northern localities. In the *Entomologist's Weekly Intelligencer*, 1859, p. 54, Gregson states, "He was surprised when Mr. Anthony Mason, of Grange, showed him a great lot of *Polyommatus corydon*, stating it was by far the commonest Blue he took. *P. corydon* should be a chalk insect, but Grange is a limestone district."

Arkle, in *Entomologist*, 19:242, gives an account of a visit to Grange over Sands, "where *Lycæna corydon*, I was informed, sports in profusion during the season." His companions, and probable informants, were H. Murray and a friend.

In the list of *The Lepidopterous Fauna of Lancashire and Cheshire* by Ellis (1890) occurs the statement, "Recorded from Silverdale (J. B. Hodgkinson) and from Grange by Morris, in his *British Butterflies*."

In Forsythe's list (see *Entomologist*, 1905, p. 88) it is stated, on the authority of G. Loxham, to have been "common about Arnside Tower some years ago. Common near Warton in 1892." South's *Butterflies of the British Isles* (1st edition) gives localities copied from Barrett, "and on limestone at Grange and Silverdale, in North Lancashire, Westmorland and Cumberland." Meyrick (*British Lepidoptera*, 1895) gives "England to Cumberland on chalk or limestone local."

Tutt (*British Lep.*, 9 : 102), with his usual thoroughness, seems to have consulted most of the authorities, and gives the following data : "Lancashire, Arnside,* Silverdale (Hodgkinson), *Ento.*, 11 : 113. Grange (Owen), Newman's *Brit. Butterflies*, p. 132, *teste* Arkle, *Ento.*, 19 : 242 (F. O. Morris, *British Butterflies*). Grange, Common on limestone, *teste* Gregson, *E. W. Intel.*, 7 : 54. Warton Crag, spelt *Whorton* (Murray), near Warton in 1892 (Loxham). Westmorland : Rough fields near Beetham and Milnthorpe (Hodgkinson). Newman, p. 132. Kendal district, not seen of late years (Moss, 1898).

There was a further record of five having been taken at Wither-slack in 1910 (September 5) by Mallinson, but frequent visits to the same spot in subsequent years did not substantiate the record. Whether they had been released by some collector who had visited Royston or some other favourite haunt previously we cannot say, but it has not been seen since and the record may be ignored. Mr. Frank Littlewood, of Kendal, reports that he had a letter from Dr. Forsythe some years ago "that *coridon* still lingered at Warton Crag," but he did not state whether he had any examples of it, and in his list, he only includes it on the authority of Loxham, and not from any personal knowledge or acquaintance.

There are no records of *corydon* for Yorkshire in Porritt's list and supplement; as for the Cumberland records in *The Butterflies of Cumberland*, Mr. G. B. Routledge states that in the *Entomologist*, 21 : 54, J. B. Hodgkinson remarks that "this butterfly used to occur at Grisedale, at the foot of Saddleback." He also says "that he has seen some specimens taken there by the late Mr. Hope of Penrith, the locality being far away from the chalk," and "this butterfly is taken not uncommonly at Grange, and it gets less common nearer Windermere (Routledge)."

The above is, so far as I can discover, all the evidence in favour of *coridon* having been observed in our area. The reader will note

* Arnside is actually in Westmorland.

that in not a single instance has the authority definitely stated that he has himself seen or taken the insect. I had some correspondence a few months ago with Mr. B. H. Crabtree, F.R.E.S., of Manchester, in which he says he has never seen in any collection a single specimen that has been reported as having been taken here. Of course in the old days they did not label insects as we do now, and on this account ancient records are more difficult to substantiate. Surely each of the persons who reported it would have examples, but unfortunately not one can be traced. Most of the evidences of the occurrences are merely copied; possibly the writers may have thought this neighbourhood a likely locality with its fine grey limestone crags and abundance of *Lotus*, *Anthyllis*, and *Helianthemum*. Starting from this fact it would easily be possible for someone to originate the rumour that *coridon* occurred, and once started the tale might be copied and perpetuated.

Now for the evidence against. In reference first to its occurrence in Grange over Sands, Gregson says that he was surprised when Anthony Mason showed him "a great lot" of *P. corydon*, stating that it was the commonest Blue he took. This appears to be the source of the many reports that it was a Grange insect, and was dated October 29, 1859 (*E. W. Intel.*), but it does not expressly mention the year they were taken. Gregson refers to them again in *The Weekly Entomologist* (1862, p. 91). Yet what I do find in *E. W. Intel.* (1857, 2:147) is the following notice: "*Duplicate butterflies*.—Having a few specimens of the following butterflies to spare, viz. *G. rhamni*, *C. davus*, *N. lucina* and *P. argiolus*, I should be glad to exchange for any of the following: *A. galathea*, *L. sibylla*, *A. iris*, *M. athalia*, *P. corydon*, *P. adonis* and *P. artaxerxes*. My specimens are all taken this year and are very good.—Anthony Mason, Grange, Kendal, July 27."

The butterfly was never seen before this date, and no one has seen it since. Does it appear likely that a butterfly advertised for in 1857 should be the commonest Blue in 1859? Is it not more probable that the "great lot" seen by Gregson were obtained by this exchange notice? Whether Gregson misunderstood or Mason was leg-pulling it is too late to ascertain. I think we can assume safely that all Grange records are incorrect. I have the late Mr. J. Davis Ward's diary before me as I write this. He started collecting as a young boy and knew most of the collectors who visited Grange, and this is his comment: "In my opinion all records of *L. corydon* very doubtful. Never heard any old Grange collector say he has seen it here." I may say that Mr. Ward knew almost every yard of the country between Carnforth and Ulverston, and collected more or less for over forty years, and was constantly on the look-out for *coridon*.

In respect of the other localities, they appear to be mostly copies of Hodgkinson's reports, and yet it is doubtful if Hodgkinson ever saw the butterfly in these parts. In the *Entomologist* for 1878 (11 : 113) he makes the following comment : "Another visit (to Arnside) about the 12th. I went to look for *Lycaena corydon*—to see it *alive* ; but no luck." Would not one be justified on reading this in assuming that he had never before actually seen it alive ? If he had had previous experience is it likely he would have expressed himself in this manner ? Would he not have been more likely to have written, "I went to look for *L. corydon* to see it *again*, but no luck."

In Tutt's *British Lepidoptera*, 11 : 102, there is the following comment by Mr. H. Massey : "Some writers give Arnside Knott as a locality for this species, but I have worked this country for twenty-five years and have never seen one, and with the exception of J. B. Hodgkinson, I never met one that had ; I am much inclined to doubt whether he really ever took the insect there at all. It is to be observed that all the records for Lancashire, Westmorland and Cumberland in Newman's *Butterflies*, p. 132, are Hodgkinson's, and the Arnside locality is a wild and uncultivated country, and at the time I first collected there 25 years ago, very little worked entomologically, and certainly not over-collected ; it seems very strange why it should have disappeared."

Many of the Manchester and Liverpool and Kendal collectors and others from further afield have searched the district for the last fifty or sixty years, but with no result. I, personally, have visited all the places mentioned during the last 50 years, and having purchased Newman's book as a boy and seen the records, I have always been on the look-out. I have visited the only likely spot near Milnthorpe, Heversham Head, but with similar result as elsewhere—no *coridon*.

I have now disposed of all the old records by Hodgkinson and Gregson, and will examine others. I have no information of Mr. Robert Marris, who is mentioned in Morris's *British Butterflies*, or of the Alfred Owen of Newman. Mr. H. Murray, of Carnforth, who probably gave the information to Arkle, was a well-known naturalist at Carnforth, but his information *re* Grange *coridon* must have been derived from Gregson's note on Mason's series. He surely should have been well acquainted with the Warton Crag locality, as it was only a mile from his home. He used to write of his captures, but I have never seen any account of his taking *coridon* either there or at Silverdale or Arnside.

I never met Mr. George Loxham, of Lancaster, mentioned in Forsythe's list, but I understand he was a very decent sort, and one of the old school and collected about the time of Gregson and

Hodgkinson. I have nowhere read that he definitely states he had personally seen or taken it, and the information may have been derived from others. Mr. F. Littlewood informs me that the Rev. Miles Moss's comment referred to Hodgkinson's records.

One is naturally reluctant to throw any doubt upon accepted records, but so far as I can ascertain the references in this case are far from satisfactory and call for more critical examination. If it is not possible to substantiate them they should once and for all be ruled out.

The district, with an abundance of various food-plants for the larvae, seems quite suitable for its existence, but probably other conditions such as latitude, etc., are against it. The nearest habitats are North Hants in the East and Glamorgan in the West, and the South Coast and Isle of Wight may be regarded as its true home in Britain.

" Brunleigh,"
Grange over Sands ;
April 8, 1940.

THE DARK FORMS OF THE TAENIOLELLA GROUP OF STOMOPTERYX (GELECHIDAE).—Stainton (1859, *Manual*, 2: 342) describes four species in this group, viz., *Gelechia ligulella* Zeller, *G. vorticella* Scopoli, *G. taeniolella* Zeller, and *G. sircomella* Stainton. He included them again in the *Insecta Britannica*, 3 (1854), and, with regard to *sircomella*, remarked, "Two specimens in Mr. Vaughan's collection taken near Bristol in June. The first was taken by Mr. Sircom, who considered it as a singular variety of *taeniolella*." (Note: The Philip H. Vaughan Collection, including four specimens of *sircomella*, is now in the Bristol Museum.) Meyrick (*Revised Handbook*, 1927) reduced the species to two, viz. *Stomopteryx vorticella* + *ligulella* and *S. taeniolella* + *sircomella*, and remarked, "The aberration *sircomella* has no fascia." With regard to the former Pierce and Metcalfe (*The Genitalia of the Tineina*, 1935, plate xi) show the genitalia of *ligulella* and *vorticella* as quite distinct. The species, therefore, should be three, viz. *Stomopteryx ligulella*, *S. vorticella* and *S. taeniolella*.

On June 30, 1939, I took at Taff's Well, Glamorgan, a dark form and sent it to Mr. Pierce for examination. He replied that this specimen shows *ligulella* genitalia. Mr. Pierce has in his collection four of the dark forms, two males and two females, and these show *vorticella* genitalia. On July 26, 1938, I took at Taff's Well another dark form which I sent to Mr. Pierce. He prepared a mount and found that it had *taeniolella* genitalia. It is therefore clear that each of the three species in this group has a dark form, without fascia. I wish to express my indebtedness to Mr. F. N. Pierce for all the trouble he so kindly took in connection with this matter.—W. E. Cox ; 279, Albany Road, Cardiff, July 17, 1940.

MIGRATION OF *COLIAS LESBIA* IN THE ARGENTINE
IN 1940.

BY KENNETH J. HAYWARD, F.R.E.S., F.R.G.S., F.Z.S.

ON January 18-19 I noticed, without paying much attention to the fact, that the number of butterflies flying over the ground before my laboratory window at the Concordia Experimental Station had apparently suddenly increased in volume, and that a high proportion of these insects consisted of the locally common *Colias lesbia* F. That this increase was sudden is shown by the fact that it was mentioned to me in conversation by several non-entomologists. Unfortunately I put the increase down to the commencement of the summer broods. This fact, coupled with the necessity of attending to other more urgent matters and to the visit of two State entomologists to whom I had to attend, caused me to pass the matter over without further thought.

On January 22, when on my way to lunch at 10.20 (sun time), I noted a few *Colias* females flying in a southerly to south-easterly direction, and something in the manner of their flight convinced me that it was of a migratory nature and not haphazard flight to new pastures. I therefore spent some time observing the movement across some low-lying pasture lands below the Experiment Station. Over the half kilometre front under observation there was a steady though thin stream of *Colias lesbia* flying at a height of two to four metres in a south-south-easterly direction. Quite 80 per cent. of these insects were females and the vast majority of the white (*helicoides*) form, few males being present. I calculated their speed at some ten miles an hour, the wind favouring them. In the open the insects flew an unwavering straight line; when obstacles were met the insects maintained their flying altitude and sought a passage through, or around, the obstacle, not over it. A few other butterflies were present, especially species of *Terias*, but these went about their daily tasks indifferent to the movement taking place around them. I watched the *Colias* till 11.15 (all times have been reduced to sun time), by which time the flight had virtually ended, only one or two insects being seen at any one time after this hour. During the time I observed the flight, only two females (no males) were seen flying in a reverse direction or otherwise ignoring the urge to move south. During the last fifteen minutes a few females were seen to dive suddenly towards the ground, and closer observation revealed the fact that they immediately sought out suitable food-plants and commenced egg-laying within a minute or so of finding suitable clovers. A workman employed some three kilometres further south of my point of observation told me

that a swarm of butterflies—white and yellow in colour—had gone over “like a swarm of locusts” earlier in the morning.

Alfalfa is not grown to any extent in Entre Ríos, due to the unsuitable soil conditions. It is therefore not improbable that the insects concerned were migrating in search of more suitable areas for egg-laying, a suggestion supported by the fact that all females examined contained fully developed eggs, that there was an enormous excess of females over males, that they were almost without exception in a very worn state, and that the few females that deviated from the line of flight to settle immediately commenced laying. It is not impossible—in fact highly probable—that this flight had been in progress during the previous days. From this moment onwards practically no *Colias* were observed in the neighbourhood. The flight was not observed some 100 kilometres to the south by the Chief Entomologist of the Ministry of Agriculture, who had left Concordia early that morning by car.

On February 2, at about 3.30 p.m., I had occasion to walk out to a citrus plantation about a kilometre towards the river and again I noted, on a very much smaller scale, a decided steady flight of these *Colias*, again towards the south east. Again a few settled and immediately commenced egg-laying.

On February 7, at 10.12 a.m., there was a repetition of the earlier flight and I was able to observe this over the same terrain. The number of insects passing was somewhat reduced, but otherwise the observations given above will serve to describe this later movement. The height and speed of flight was about the same.

About this time one of the local (Buenos Aires) English papers printed a letter from a correspondent, asking where all the yellow and white butterflies he had seen passing for some days went to. There followed as is customary a number of replies, the majority showing a consummate ignorance of natural history, but this correspondence served to put me in contact with a Mr. Brooke Hodgson, who lives in Florida, a suburb of Buenos Aires, a gentleman who, though not an entomologist, has for many years interested himself in making notes on insects he has observed. Mr. Hodgson very kindly sent me some ten closely-written sheets of his notes on *Colias lesbia*, made around his house in Florida. These notes, which are very detailed, would prove too long for publication, and with his permission I have taken out the following facts that bear on the 1940 migratory flight of our *Colias*. The locality is Florida and the times are reduced to sun time.

January 26: A few *Colias* present all day but not in abnormal numbers. At 5.30 p.m. a great number of *Colias* observed flying high towards the W.S.W., slowly, the flight continuing with little variation in the number of insects present at any one moment till

after 7.30. Wind northerly, almost calm. The white female *helicoïdes* form greatly preponderating. (In all Mr. Hodgson's observations for 1940 he notes a marked preponderance of this female form over the yellow normal form, and states that few males were present.)

January 27 : From 7.30 till about 9.30 a few *Colias* were seen on the wing; after this hour the number of the *helicoïdes* form appeared to increase, and at 10.30 a slight westerly trend was observed in the flight of the insects. During the afternoon Mr. Hodgson went some 12 kilometres out into the country, noting a marked westerly "creep" amongst the many *Colias* seen. Back again in Florida at 4.30 he noted a marked W.S.W. flight. The wind all day was southerly to S.S.E., light. The insects were flying from three to six metres above ground level, slowly, without deviation except to pass obstacles. At about 4 p.m. he calculated some 70 per minute passing on about a 10-metre front.

January 28 : Wind N.N.W., light, somewhat variable. Earlier in the day the *Colias* present showed a trend to move in a southeasterly direction. After this date there was a very sudden decrease in the numbers of *Colias lesbia* present in the district.

Tucuman ;

May 12, 1940.

LIBERATED BUTTERFLIES.—With reference to the discussion on this subject I am definitely opposed to the introduction of a species to a district on any pretext and whether it has previously occurred there or not. I agree with Mr. Paton that one of the most interesting and important branches of the study of Lepidoptera within the scope of many entomologists is the careful observing and recording of the occurrence or changes in the status of species in a particular district over a long period. County and national lists have been largely compiled from such observations in the past, and revised estimates of the prevalence and distribution of many species can be made in the future. Natural changes, whether progressive or retrogressive, are equally interesting, but will be undiscernible if the practice of planting species ever becomes widespread. The liberation of migrant species would certainly be more serious than the comparatively petty meddling with the distribution of indigenous species now apparently going on ; but exactly the same principle is involved in each case. If a species cannot maintain itself in a district it should be allowed to disappear either permanently or until it naturally recovers lost territory. The protection of a declining species from collectors, dealers, etc., is, of course, a very different matter, so also was the introduction of the Dutch race of our long extinct *Lycæna dispar*. Disturbance due to man's varied activities is unavoidable, but surely entomologists should refrain from further gratuitous interference with the delicate balance of nature.—S. B. HODGSON ; 5, Charles Street, Berkhamsted, Herts.

A CORRECTION OF SOME RECENTLY PUBLISHED STATEMENTS ON THE SPECIFIC NAMES OF CERTAIN EUROPEAN SPECIES OF *EREBIA*.

By B. C. S. WARREN.

My attention has been drawn to an article by the Rev. G. Wheeler, in the May number of the *Entomologist's Record* (pp. 59-61), in which he contends that some of the names used by de Prunner for *Erebia* species have been incorrectly applied in my Monograph of that genus.

To start with I must refer to Mr. Wheeler's remarks on the index of my book. He writes (p. 59) :

" . . . on looking for *stygne* in the list of species, 391-399, no such name was to be discovered ! In addition to *stygne* I looked in vain in the index for any one of the following universally recognized names : *evias*, *nerine*, *lappona*, *arete*, *glacialis*, *ceto*, *goante* ; so I had to search through the body of the work . . . to find out under what headings to look for information about any of these species."

For the benefit of those who do not possess the book, I can only say that every name mentioned is included in the index. If a reader wants to find "*evias*" he has only to run down the "e" column (p. 402), where he will find "*evias* Godt. (*triarius* ssp.), 154," etc., etc. Even in the "Check List" on pp. 391-399, all names retained in use are of course given, and this includes *evias*, *nerine*, *ceto*, and *stygne* ; so I cannot understand how Mr. Wheeler failed to discover them.

To turn to de Prunner's names, Mr. Wheeler writes :

" No doubt the author had satisfied himself as to the species de Prunner was describing, but in order that the names so identified should be accepted for general use it would be necessary to prove that de Prunner must have meant the species with which the author identified the descriptions, and that he could not possibly have meant anything else. . . . But has he proved this? Most assuredly not."

It will be necessary to consider in turn the arguments with which Mr. Wheeler sought to justify this emphatic statement.

(1) "*Evias*." He writes :

" The outstanding peculiarity of this species is the triple eyespot at the apex of the fore wing. Does de Prunner's original description of *triarius* mention this ? At first glance one might suppose that it did, but on reading it the ' three white-pupilled spots joined together '

are found to be on the hind wing, and no reference is made to the outstanding characteristic of *evias*; there can therefore be no sufficient reason for this identification, or even a probability of its being correct, and there is certainly no reason why *triarius* should displace *evias*, and *evias* it must remain."

From this it is clear that Mr. Wheeler has only looked at de Prunner's work in the same casual manner as he did mine. It is well known to those who have studied de Prunner's book that he had his own methods of description, always referring to the underside as the "inside," and the upperside as the "outside," and in consequence calling the hind wings the "first" and the fore wings the "posterior." He nearly always describes the hind wings before the fore, and as he includes descriptions by other authors, his methods naturally cause difficulty to those who are not familiar with his work. Years ago Dr. Verity called attention to these facts in the *Entomologist's Record* (1928: 42), noting especially that de Prunner used the terms "priores" or "primores" to denote the hind wings, and "postici" the fore wings. The following year I again mentioned these facts in the same periodical (1929: 144-148), and once more, no later than last year in the *Dt. ent. Z. Iris* (53: 32-35). But even if Mr. Wheeler had no knowledge of these characteristics of de Prunner's work, the utter rubbish it makes of his descriptions if one turns them the wrong way round (i.e. applying the details of the fore wings to the hind, and vice versa) should have warned him of the trap into which he has fallen.

Returning to the description of *triarius*; de Prunner wrote of the fore wings, after having described both sides of the hind fairly accurately (judging by contemporary descriptions), "posterioribus, intus extusque fascia transversa rufescente flava, ocellis tribus unitis nigris albe-punctatis, unoque solitario." This is a concise and accurate description, and when taken with the details given for the hind wings leaves no possible uncertainty as to what he meant, and though *evias* of course "remains *evias*" (the Pyrenean subspecies) it cannot stand as the specific name.

(2) "*Ceto*." Mr. Wheeler writes:

"The special characteristic of this species is the elongated form of the spots. Not a word is said of this in de Prunner's description of *alberganus*, so why should we be expected to regard this description as necessarily, or even probably, referring to *ceto*?"

In de Prunner's description of the upperside, he says, of the fore wings, "saepe interrupta rufescente flava fascia, duobus punctis fuscis." Now in *Erebia* such broken-up bands are produced by the

extension of the dark ground-colour along the nervures; this has the effect of producing more or less elongated patches of colour, as distinct from widely-separated spots which are usually more or less rounded. De Prunner was careful to distinguish between these two types of markings; noting those of the hind wings simply as "spots," i.e. "ocellis tribus rufescentibus flavis illuminatis, et uno caeco." This exactly describes the characters of the race of the species in his district: it is a comparatively small, poorly-marked race, with relatively elongated spots on the fore wings and small, rounded spots on the hind; the black dots in these spots frequently contain minute, white points. It is an accurate description, which indicates the elongated spots where they exist, but not when they do not; there can remain no uncertainty as to the identity of the species. The description would, of course, not apply to *ceto* Hübner, but why should it? The validity of *alberganus* is in no way affected by Mr. Wheeler's remarks, and *ceto* of course "remains *ceto*" in its proper place.

I may take this opportunity to correct a slip in my remarks on *E. alberganus* in my book (p. 219). When referring to the number of spots, one line reads: "Although the original description gives four on the forewings, and two on the hind . . ." This of course should be two on the fore wings and four on the hind; but the sense of the sentence is not affected.

(3) "*Pluto*." Mr. Wheeler writes (p. 59):

" . . . whatever de Prunner's *pluto* may have been it could not be *glacialis* as I will presently show."

And (p. 60):

"With regard to *pluto*, the description might quite well refer to the black form of *glacialis*, but de Prunner says that his *pluto* is found at the end of May and in June! Now I will defy anybody to find any form of *glacialis* at the end of May, and I doubt whether it could be found even in the Basses Alpes in June, so one can only say that de Prunner has gone wrong somewhere, and that we don't know to what species his name refers."

Mr. Wheeler has overlooked de Prunner's remark on the habitat of his *pluto*. In his Supplement he gives a short note on the habitats of alpine species, and refers to them in order of ascending altitude. Starting with woodland species he passes such species as *P. mnemosyne*, *P. phoebus* and *E. tyndarus*, etc., and states in his last line, "finaliter *Castor* et *Pollux*, et in summitate *Pluto* et *Petrosus* inquirant." *Castor* and *pollux* are referable to *E. pandrose*;

it is therefore at greater altitudes than that high-flying insect frequents that he tells us we must look for *pluto*. This fact, in connection with the description, which even Mr. Wheeler admits might "quite well refer to the black form of *glacialis*," makes the identity of *pluto* as certain as if de Prunner had left us a type specimen. The obvious mistake in the date ceases to be of any significance, but I may add that I have come on specimens taken in late June, and have myself seen it on the wing in the Engadine on July 2 at close on 9000 ft. On that occasion it would certainly have been out in June, if I had been a day or two sooner, and in the Basses Alpes it will certainly emerge earlier at lower levels.

Perhaps I should add that *petrosus* is a synonym of *pluto*, de Prunner having apparently described the two sexes of this species under different names.

(4) "*Stygne*." Mr. Wheeler can scarcely be said to give any reason for attempting to discard the name *neolans*. His suggestion that it might refer to *medusa* or *melampus* is ruled out by the fact that de Prunner deals separately with these species, as well as the description of the underside of the hind wing of *neolans*. Mr. Wheeler continues :

" . . . but I can find no specimen of *stygne* which even approximately resembles it, even among specimens from its lower habitats ; the mountain forms (and de Prunner says his species came from the mountains) are conspicuous for the absence of the ' broad ochraceous band ' on the upperside of the fore wings, and indeed do not show a broad ochraceous band on any wing, upper or underside. The number of eyespots is in most species so variable that it can rarely be relied on as a distinguishing character."

These remarks only prove one thing, i.e. that in his search for material of *stygne*, Mr. Wheeler refrained from looking at the plates in my book. Had he done so he would have seen lowland specimens, especially from Spain, in which the bands are so broad that they cover almost one-third of the wing area ; and mountain specimens from the Pyrenees, Jura and Black Forest (pl. 100) in which they are but slightly narrower. In the Piedmont race the width of the band is less, but still vastly greater than in the dark race of the Valais, with which Mr. Wheeler is familiar ; and the two males from the Piedmont which I figured (pl. 98, figs. 1527 and 1533) show a band on the fore wing which is quite reasonably described as " broad." The number of spots of course varies, but to a considerable extent they tend to different combinations in different races, and because the number de Prunner mentions is correct for a good proportion of the specimens from his district, I can see no

reason for ignoring the fact. His description will be seen to agree with my figures in the following points: Fore wings upperside, a fairly broad band, frequently with four black spots with white pupils; hind wings, a band (sometimes continuous, sometimes not) with four black spots and white pupils; underside fore wings, same as upperside; hind wings "*atrofusce undatis fascis, quatuor ocellis nigris albe illuminatis*."

The contrast between the upper and underside of the hind wings (not overlooking the point that the white pupils in the black spots are very frequently smaller on the underside), in conjunction with the characters given for the fore wings, combine to make a description which agrees with the Piedmontese race of the species very closely.

I did not consider it necessary to go into these details in my book, as I had dealt with these names years before (*Ent. Rec.*, 41: 144-148) and my remarks had never been questioned. I may add that Dr. L. G. Higgins, who made an independent study of de Prunner's work at that time, came to the same conclusions as I did in respect of the identity of these species. The fact that Mr. Wheeler has, as I have shown, not been able to bring a single supportable argument against our identification seems to be a final proof of the accuracy of our conclusions.

The four remaining names to which Mr. Wheeler takes exception he admits to be correctly identified.

Such further arguments as Mr. Wheeler directs against the International Zoological Code call for no comment. The value of this international control of nomenclature is now universally recognized, and the extent of the work done under the Code during the last 25 years demonstrates the increasing appreciation of this fact. This great volume of work has been the first real step towards stability in nomenclature, and it is strange that the old system, which had no more stable foundation than individual opinion, can still find supporters, especially when one recalls that it was this liberty of action for personal likes and dislikes which was wholly and solely responsible for the existence of the chaotic mass of names, so many of which are superfluous and have now to be got rid of. The old system is condemned by its results; its most ardent supporters are unable to deny this, or to advance any stronger reason against the abolition of superfluous names than that some of them were "*generally accepted*" in the past. It is impossible that systematic entomology can ever revert to such methods; names must stand or fall on their merits, and not on traditional use; it is incredible that anyone should still contemplate the possibility that "*generally accepted*" mistakes can continue to find a place in scientific work.

DESCRIPTION OF THREE NEW HESPERIIDAE
(LEPIDOPTERA) FROM CHINA.

BY BRIGADIER W. H. EVANS.

THE three Hesperiiids described below were all obtained by Dr. J. Klapperich at Kuatun in Fukien, China (27.40 N., 117.40 E.) at 2300 metres in June, 1936. The type of each was deposited in the Reichsmuseum A. Koenig, Bonn, before the war.

Halpe kuata sp. nov.—Most nearly allied to *Halpe submacula* Leech, having the antennae white ringed before the apiculus, two fore-wing cell spots and conspicuously chequered cilia; differing in having the hind wing much less profusely marked and in the form of genitalia.

♂. Fore wing 20 mm. Above dark brown. Fore wing clothed with dark greenish scales; pale yellow hyaline spots, double in cell, in spaces 2 and 3, subapical in spaces 6 and 7 (may be a dot in space 8). Hind wing clothed with dark greenish scales; unmarked (the spots in spaces 2 and 3 from below sometimes show faintly). Below similar. Fore wing with costa and apex bright greenish ochreous, remainder black. Hind wing entirely greenish ochreous; small white spots in spaces 2, 3 and 6. Brand on fore wing above as in *submacula*. Described from ten males.

Ochlodes klapperichi sp. nov.—Most nearly allied to *Ochlodes crataeis* Leech, having the same kind of grey discal stigma; differing in having white spots on the hind wing upperside and in the genitalia.

♂. Fore wing 19 mm. Above dark brown with white hyaline spots, bases dull ochreous. Fore wing with two cell spots, spots in spaces 2 and 3 and a row of apical dots in spaces 6, 7 and 8. Hind wing with a spot in the cell and discal spots in spaces 2, 3 and 6 (may be dots in spaces 4 and 5). Below generally similar. Fore wing with costa and apex broadly yellowish green, remainder dark brown. Hind wing entirely yellowish green. Cilia whitish. Described from four males.

Zinaida fukia sp. nov.—Most nearly allied to *Zinaida theca* Evans, having no stigma and two cell spots; differing in having pure white cilia and the underside of the hind wing conspicuously whitened.

♂. Fore wing 19 mm. Above dark brown with hyaline white spots and white cilia. Fore wing with two widely-separated cell spots, a dot (opaque) in space 1b against vein 1, decreasing discal spots in spaces 2, 3 and 4; subapical dots in spaces 6, 7 and 8. Hind wing with an irregular row of small spots in spaces 2, 3, 4 and 5. Below generally similar. Fore wing with the costa and the apex broadly with inconspicuous ochreous scales. Hind wing entirely overlaid with dull ochreous scales, but the dorsum and termen are broadly whitened. Described from eight males and four females.

British Museum (N.H.), S. Kensington, S.W. 7.

SOME NOTES ON MIGRANT LEPIDOPTERA IN SYRIA,
IRAQ AND IRAN.

BY E. P. WILTSHIRE.

RHOPALOCERA.

Zegris eupheme dyala Peile.—Peile's record of a migration in Iraq (*Proc. R. Ent. Soc.*, 1939, p. 135) is most interesting. The Dyala is the northernmost recorded locality for this subspecies, which is known hence south-eastward along the desert foothills of the Zagros as far as Bushire. Only one hundred miles north-west of the Dyala, at Fatha Gorge on the Tigris, the species is represented by the subsp. *tigris* Riley, which extends westward into Trans-jordan. Presumably transitional forms occur on the favourable terrain of the Jebel Hamrin between the Tigris and the Dyala. These facts, I think, make it unlikely, or rather impossible, that this species could make long migrations in this part of the world; and indeed its differentiation into numerous geographical forms is a consideration against its doing so anywhere else. The movement seen by Peile, therefore, must have been one of limited length. Since they were moving in a downhill direction it may be that they were seeking warmer quarters. The species, however, seems to be quite absent from the alluvial plain of Central and Southern Iraq, and to prefer the hills fringing that plain. These hills have a far richer flora of the Cruciferae which are their food-plant. If the flight continued for 15 miles more in the direction observed, the butterflies would reach this alluvial plain.

Pieris brassicae.—Does not occur at all in the plains of Iraq.

Pieris rapae.—A common oasis insect in the plains of Iraq.

Catopsilia florella.—Single specimens were observed in March and April on low desert hills, Fatha Gorge and Jebel Darwishka (near Khanaqin), Iraq, 1936. Not noted by Peile, probably therefore only reaches Iraq in some years.

Glycestha aurola (= *Belenois mesentina*).—A large number of worn specimens were seen, together with *Teracolus fausta*, on November 8, 1936, among desert hills near Khanaqin. Occurs on the Syrian coast, chiefly in October and November. Larvae are numerous there in some years in early autumn. Also seen in Bagdad on the alluvial plain in Iraq in November, 1936. A number of worn examples were taken on the low hills of the Dyala district (Khanaqin, Qizal Robat, Table Mountain) on April 5, 1936, presumably having hibernated there, for Peile noted it there at the end of January.

Colias croceus.—To be seen in the Iraqi plain in every month except August and September. Perhaps aestivation is the cause

of this short disappearance. In the Persian hill-country it is on the wing (with *V. cardui*) until December, reappears in March or April, and continues to be seen throughout the summer. The insect is ubiquitous, but no mass movements have been noticed.

C. hyale does not occur in Syria, Iraq or Iran.

Vanessa cardui.—To be seen flying in gardens throughout the winter in the Iraqi plain, and becomes extremely numerous in March and April. From March to May larvae are common in Iraq on *Malva parviflora* and also on thistles. It disappears during the hottest summer months from the Iraqi plains, but is to be seen all the summer in the mountains of Persia, Iraq, and Syria. On February 22, 1940, several worn specimens were seen flying in sunlight in the Karazal meadows near Kermanshah (4800 ft.), Iran, apparently having successfully hibernated at this altitude. The winter 1939-40 had been rather milder than normal, and perhaps their survival was exceptional.

About April 10 a northward mass movement was observed at Jericho (Jordan valley) in 1933. An average of half a dozen would pass within catching-range of myself in one minute. They seldom stopped. I forget which way the wind was blowing. The movement lasted the whole day in bright sunshine. A week or two later a friend returning to Beirut from a motor-trip in N. Syria reported having seen swarms of butterflies, so dense that his car's radiator became coated with them "like a carpet." I have no doubt that these were *cardui*.

Vanessa atalanta.—Apparently winters in the Iraqi plain, though not seen commonly. Reported from Bagdad gardens in November and May (the latter my own observation). It seems to fly, off and on, throughout the winter on the Syrian coast also.

Aglais urticae.—Not below 4000 ft.

HETEROCERA.

Macroglossa stellatarum.—Ubiquitous. Reported from the Empty Quarter of Arabia by Philby. I am still doubtful whether its appearance in unrelieved desert is migratory, or whether it may actually breed there, but think the former more likely. Comes indoors in autumn to hibernate.

Celerio lineata livornica.—From mid-March to May the imago is common in Iraq, both in the desert and oases, and the larvae often swarm in the desert in April. I noted one imago at light in the Syrian desert on September 30, 1936, but I believe such autumn appearances to be rare. In the mountains the moth occurs in the summer.

Utetheisa pulchella.—Breeds in the plain and low desert hills of Iraq, the larvae having been recorded even during the coldest

months, and the imago being taken from April to December, becoming more numerous as the season advances.

Laphygma exigua.—Ubiquitous; in Iraq flies from March to November.

Euxoa ypsilon.—Comes to light commonly in the oases and desert of Iraq from September to June. During the summer months the imago is to be seen at heights, but I see no reason to explain this by the theory of a migration to the hills rather than by climatic influences. Like *Euxoa segetis* it seems to produce repeated and overlapping broods during the cooler months, thus belonging to a different category from the two-brooded species that appear in autumn and spring in the desert, such as *Cornifrons ulcerceratalis* Led., *Dyscia plebejaria* Ob., etc.

Plusia gamma.—On the Syrian coast it was noted only during the cooler months, October to March, though it was one of many species which I noticed flying around and settling on S.S. "Champollion" between Greece and Egypt on September 24, 1936 (see below). The larvae are common on spring herbage on desert hills in Iraq, together with those of *P. circumflexa* L., and the imago comes to light in the Iraqi plain chiefly from November to April. In the hills it appears sporadically during the spring and summer.

Pandema anysa.—The imago first appears in Bagdad in late February, but the main emergence is at the end of April; larvae are to be found in swarms on *Populus euphratica* in March and April. At a desert locality many miles west of the Euphrates the species came in enormous numbers to light in June, but was not observed there earlier, though insects were being taken there at light regularly from the end of March onwards. I can account for this only by supposing a sudden emigration from the riverain tracts westward. Larvae continue to be observed, though in less numbers, throughout the summer in Bagdad, and odd imagines come to light until October. A specimen was taken in an Elburz river valley (at 5000 ft.) on May 28, 1939. At Beirut the imago has been noted from April to June.

MICROLEPIDOPTERA AND GEOMETRIDAE.

Other species noted on S.S. "Champollion" (vide *P. gamma* supra) were: *Nomophila noctuella* Schiff., *Margarodes unionalis* Hüb., *Rhodometra sacraria* L., *Hapalia ferrugalis* Hüb. (= *martialis* Guen.). Of these I have not noted the second in Iraq and Iran, but the other three are fairly ubiquitous.

CONCLUSIONS.

From the above records I am led to suppose that Iraq is a source of emigration for several insects, especially *C. croceus*,

V. cardui, *P. livornica*, *U. pulchella* and *P. anysa*, but that their emigration from Iraq is doubtless aided by the advent of immigrants from still further south, i.e. the Persian Gulf and S. Arabia. These species do not, it should be noted, all perform the same type of emigration. Iraq may also be a source of emigration for *G. aurora*, if this species over-winters there every year—a fact not yet established. *C. florella*, on the other hand, seems to immigrate from a source south of Iraq (perhaps the “Brimstone butterfly” recorded by Philby from Latwa, in the Wadi Dawasir, Arabia, was this species). *P. rapae* is certainly a thriving resident, independent of immigration; its dislike for unrelieved desert makes it unlikely that it should emigrate. *V. atalanta* seems a winter visitor; it is not yet known to breed in the plain of Iraq at all. The status of *P. gamma* in Iraq seems obscure; it certainly breeds there in winter and spring; is its apparent absence during the summer due to aestivation, or to emigration followed by re-immigration? It has not yet been seen there in great numbers as sometimes in Europe. *A. ypsilon* is almost certainly a year-round resident. *C. exigua*, *S. sacraia*, *N. noctuella*, *H. ferrugalis* and *P. maculipennis* are ubiquitous species which certainly reside and breed in most types of Iraqi biotope, and probably also drift in and out of the country very freely, small parties often joining mixed companies of migrating insects.

NOTES AND OBSERVATIONS.

NYMPHALIS ANTIOPA IN HERTS.—On August 24, 1940, I had the good fortune to capture a Camberwell Beauty in the garden. It was fluttering over some Buddleia, and was in perfect condition except for one antenna, which was slightly damaged.—ROBERT GERARD; Blakesware, Ware, Herts.

POSSIBLE SECOND BROOD ERYNNIS TAGES.—As in some seasons this species appears to produce a second brood, it may be of interest to record that this was the case this year. A specimen was taken by me in August.—J. M. CHALMERS HUNT; Little Orchard, Broad Oak, near Canterbury.

UNUSUAL BEHAVIOUR OF LYSANDRA CORIDON.—On July 27 this year I was collecting butterflies at the foot of Dunstable Downs (Herts) when my attention was caught by a group of 15 or 20 male *coridon* at rest on a piece of dried dung. At first I thought that the attraction was probably a freshly emerged female. On closer inspection, however, no such lure was discoverable, and so a closer inspection of the dung was made. This consisted of a dry outer shell, the centre

being composed of a semi-fluid mass swarming with maggots. There was no other ascertainable attraction. I revisited the locality on August 3, and on this occasion kept my eyes open for any similar behaviour. I was not disappointed and saw half-a-dozen or more clusters of males at rest on dung, and in each case no female *coridon* was evident in the vicinity. On consulting the literature I have available I can find no reference to this habit—if such it is. Have any other collectors had similar experiences with this butterfly? I should be very interested to learn if they have.—NEVILLE L. BIRKETT, B.A.; The Cottage, Kilner Park, Ulverston, August 10, 1940.

PIERIS BRASSICAE IN THE CITY.—If Mr. Bedford had walked in the Gardens of the Tower of London on July 25 he would have seen scores of *P. brassicae*, and in the afternoon of August 6 a very worn male *Argynnis paphia* was flying around the Dahlias.—K. E. S. COLMAN; 3, Mincing Lane, E.C. 3, September 5, 1940.

COURTSHIP OF *PIERIS BRASSICAE*.—On August 3 I noticed a female *Pieris brassicae* alight on a stinging nettle with the wings fully expanded and a male hovering just above. The male then settled on first one and then the other hind wing of the female, at the same time drawing its fore legs backwards and forwards across the female's wings. This movement, which was carried out rapidly, produced an audible scraping sound which could be clearly heard five feet away, and continued until they were separated by a gust of wind. They were not *in cop.*, the male facing the same way as the female throughout the performance, which was obviously a form of courtship.—J. HEATH; Heathcot, Hedge End, near Southampton, Hants.

HELIOTHIS ARMIGERA IN S. WALES.—On August 28 I caught a scarce Bordered Straw (*Heliothis armigera*) moth. It was flying at dusk in this garden and in good condition. It would be interesting to know of any other records of this moth in South Wales.—C. H. TAIT; Morningside, Newton, Swansea, Glam.

PARASCOTIA FULIGINARIA IN SURREY.—On July 16 this year I took seven males of this species in a woodshed in the garden here, among old pine logs. I also found two empty cocoons and a pair of detached wings. Most of the specimens were in fairly good condition. Other interesting records for the locality recently are: *Orrhodia rubiginea*, one female at sawlow, April 10, 1939; *Lithophane semi-brunnea*, one female, April 7, 1939, at sawlow; *Hydrelia uncula* very common in June in a marshy spot near the Basingstoke canal.—H. L. G. STROYAN; Auchengray, West Byfleet, Surrey.

ABERRATIONS OF *ZYGAENA TRIFOLII*.—In the course of three days' collecting in the marshes of N. Devon I secured a remarkable series

of *Z. trifolii*. The most interesting insect was one showing the additional sixth spot which South suggests may be due to the cross *trifolii* \times *filipendulae*. In addition this specimen was spotted as in ab. *glycerrhizae* and the red colour was replaced by a yellowish orange, the insect presenting the combined characteristics of hybrid, *glycerrhizae* and *lutescens*. Another interesting specimen was a gynandromorph in which the wings of the male half were barely half the span of the female side. In addition to one other hybrid, abs. *robi* and *glycerrhizae* were fairly numerous, though ab. *basalis* was not found. One beautiful example of ab. *minoides* was also taken. All the above were found in one field. The adjoining colony of *Z. filipendulae* were mostly normal, with about 20 per cent. ab. *hippocrepidis*.—E. H. WILD; "Greystones," Normanton Road, S. Croydon, July 18, 1940.

CALLIMORPHA JACOBÆAE L. FEEDING ON TUSSILAGO FARFARA L. —On July 14 during a ramble in Bricket Wood, Herts, with a party from the London Natural History Society, I came upon a colony of larvae of the Cinnabar Moth (*Callimorpha jacobæae* L.) feeding on Coltsfoot (*Tussilago farfara* L.) in the brickfield. The larvae were eating only the upper layers of the leaf, leaving the lower cuticle intact. There was no Ragwort (*Senecio jacobæa* L.) in the immediate neighbourhood, although the plant is plentiful nearby. If the larvae had been starved onto Coltsfoot after eating up all the Ragwort, then we should have expected to have found leafless stalks of Ragwort; we looked for these but could not find them. Mr. Edelsten tells me he has never heard of wild Cinnabar moth larvae on Coltsfoot, and after referring to various books we found only one in which Coltsfoot was mentioned for this species, and even then not as a natural food-plant: A. G. Scorer (1912), *The Entomologist's Log Book and Dictionary of the Life Histories and Food-plants of the British Lepidoptera*, p. 161, where the food-plants are quoted thus: "On *Senecio jacobæa* L. In confinement will eat *S. vulgaris* and *Tussilago*."—ROBERT B. BENSON; Dellfield, Felden, Boxmoor, Herts, July 20, 1940.

CACOEZIA PRONUBANA HÜBN. IN GLAMORGAN.—On September 30, 1939, I took a quite fresh male of this species at rest on a bush in our garden here. This is the first example I have heard of on this side of the Bristol Channel. Apparently it is extending its range northwards.—W. E. Cox, F.R.E.S.; 279, Albany Road, Cardiff.

CNEPHASIA GENITALANA PIERCE IN GLAMORGAN.—I took one example at Taff's Well on July 7, 1937. Meyrick remarks, "Kent, on chalk coasts, local; not recognized elsewhere." Mr. F. N. Pierce has identified my specimen.—W. E. Cox, F.R.E.S.; 279, Albany Road, Cardiff.

COLEOPHORA GENISTAE STAINT. IN GLAMORGAN.—On June 16, 1938, I found eight larval cases of this species on a small isolated bush of *Genista anglica* in the Brynau Valley, Taff's Well. I took

four of these. One moth emerged August 1, 1938; also some hymenopterous parasites.—W. E. Cox, F.R.E.S.; 279, Albany Road, Cardiff.

ORNIX FINITIMELLA ZELL. IN GLAMORGAN.—On July 18, 1938, I took one example of this species at Taff's Well. Meyrick remarks, "Essex, Durham, local, probably overlooked." Mr. F. N. Pierce has identified my specimen.—W. E. Cox, F.R.E.S.; 279, Albany Road, Cardiff.

NOTES ON TRYING TO BREED *PACHETRA LEUCOPHAEA* (THE FEATHERED EAR MOTH).—My friend, Mr. Oliver Howard, informed me on June 7, 1940, that he had captured a female of the above moth at Wye and that it had laid a batch of eggs and he offered to let me have some. On June 13 he sent me 25 freshly hatched larvae. In the meanwhile I had turned up my copy of Tutt's *Notes* and had read the remarks of Dr. Chapman regarding this insect: "I find that I rarely fail to rear anything to which I pay sufficient attention, especially if I individualize each larva. Dampness, stale food and crowding are the great enemies of rearing larvae in captivity and they all result from trying to do more than the time and attention available justify."

These larvae were therefore to have every attention and at first each one was placed in a separate small glass-topped tin. The small larvae did not seem at ease, and therefore each one was placed in a small test-tube, so that it could rest on the grass stems in a vertical position. This immediately proved much more satisfactory, and by covering the corks with tissue paper and keeping the tubes in the shade but in the light and only placing a few blades of grass in each tube, the food kept well, there was no sweating and the larvae kept healthy.

As the larvae grew, larger test-tubes were used, and each larva was kept separately with fresh food each evening. They grew fairly rapidly at first, but they were always very slothful and never seemed active or moving about. When disturbed they could move away with great rapidity with a nervous jerky motion, but they reverted to inactivity as soon as they found cover. During all the time I had them under immediate observation, I never saw them feeding or moving about of their own initiative. They rested all day and after the second instar mostly at the very top of the test-tubes near or on the corks, with their heads turned round in horseshoe shape. Thinking this might indicate that they were seeking the grass flower heads, I mixed in one or two of these with the blades of grass in each tube and found that the larvae then rested on these or on the corks.

On July 23, in the third instar, one of the larvae died unaccountably. It seemed to become transfixed, it remained rigid and the skin distended as if the larva had been "blown."

On July 31 the larvae were about 1 in. long and a monotonous dull sandy drab colour, almost devoid of marking. After this I

kept them in boiler tubes, as the test-tubes seemed too small and each tube was covered with a bit of old netting and a cellophane covering, fastened with a small elastic. Although the larvae appeared so sluggish, they must have been active late at night, as four escaped, but they had not wandered far and three were retrieved, being found on the covers of one of the adjoining tubes. The tubes were always kept erect and along the side of a wooden box.

After the last moult early in October the larvae changed their shape, colour and markings. Up till then they had had relatively small heads, but after this moult they had large heads. The featureless impure buff-grey colour turned to a gay tawny shade with various and varied black streaklets and spots on each segment of the body. In the last two moults the larvae seemed to enjoy wet food, and when I gave them fresh grass at night the tubes were only covered with the nets, putting the cellophane over in the morning when the excess moisture had had time to evaporate.

At the end of October there were 22 larvae still thriving and healthy, and these were put out into the open in two large perforated zinc cages that had been prepared and in which various kinds of grass were planted. The cages were sunk in the ground. The weather turned exceedingly wet and in the daytime the cages were covered by sheets of glass, which were removed at dusk. Both cages faced the south and were protected by a hedge from the north. In the larger one, which was 2 ft. by 1 ft. and 1 ft. high, 16 larvae were placed, the remaining six larvae being in a smaller cage of 1 ft. 3 in. by 9 in. and 1 ft. high. Both cages extended about 9 in. over the earth, and in an effort to give conditions as nearly as possible to those prevailing at Wye, the grass in the cages had been planted in chalky soil from the downlands at Caterham. After the first few days in the cages, I never saw a trace of the larvae again.

As we changed our abode early in March I had to dig the cages up and transport them to our new home. Up to June 10, when I fell ill, no moths had emerged. On June 26 one full-sized moth was brought to me, which had emerged in the smaller of the cages and which had evidently been out several days, as it was in a sadly worn condition.

This was the only success, if it can be called a success. With care there appears no insurmountable difficulty in bringing the larvae to the full-fed stage, and the only explanation I can venture for the meagre result is that in last October to December we had such excessive rains that the ground was completely waterlogged. Afterwards at Christmas we experienced most extreme weather with a foot of snow lasting several weeks. This may have harmed the hibernation of the insects, as they may not have been able to find suitable cover in the restricted space of the cages.

On sifting the earth of the cages I found one empty pupal skin, apparently in the earth without any sort of puparium, a further pupa that had died. In spite of the most careful search I could only find one remnant that I could determine as the corpse of a dead larva.—A. WELTI; Tower House, 40, Trinity Square, E.C. 3.

LIBERATED BUTTERFLIES, ETC. (*Entom.*, 73 : 27, 116, 224).—Mr. Wheeler's plea for "a little logic, a little common sense and a little sense of proportion" had better be applied to himself than to me. I can see no lack of these qualities in my former letters. I have not taken a census of Britain and Mr. Wheeler may be quite right as to the general ignorance on the subject, but I think not so as regards naturalists. I am secretary of a small natural history society—we have, it is true, only 15 members (all keen naturalists), but during the last 38 years there have been over 40, not *one* of whom but would loathe the "planting out" of species. Perhaps Mr. Wheeler knows 1350 present-day naturalists (and including these, 3600 past and present ones) who take the other view, but I doubt it. His 99 per cent. may be reversed, but cannot be upheld.

Numbers apart, whether Mr. Wheeler knows it or not, those who study distribution are greatly hampered by the—to my mind puerile—custom. If he be right it is useless to record localities—the record may be from some "butterfly farm."

We who protest have, I believe, no less sense of the beautiful than Mr. Wheeler has, but, as I formerly wrote, Dame Nature needs no lip-stick, and anyone with an eye for real beauty will admit the fact.

Planting-out has grave perils (I did *not* confine my objection to butterflies), and I have been told by two dependable naturalists, one of them a botanist of world-wide repute (not a *quasi*-naturalist, as Mr. Wheeler has the good manners to call me) that the introduction of the so-called "ice-plant" has ruined the local flora of parts of Devon and Cornwall.

What is, or is not, *native* is a question to be solved by time; no one would exclude the common elm or the corn-poppy, but anyone who *planted out* peaches with the idea of adding to the native flora would not have the general support of such botanists as I have met.—C. I. PATON; 7, Cavendish Road, Sutton, Surrey.

[This is not the first time this controversy has been aired in these pages, without any satisfactory conclusion being reached. It seems that unless the subject be approached with a proper spirit of compromise, it will break out many times more. It ought to be recognized nowadays that neither side can have it all its own way. Irreparable damage has been done admittedly in many parts of the world by the indiscriminate introduction of animals and plants into new environments; on the other hand, properly controlled introductions may be highly beneficial, and should at any rate provide the observant naturalist with plenty of opportunity for the exercise of his particular faculties. To deny even this type of introduction is to be merely bigoted.—ED.]

SOME DUMFRIESSHIRE CRANE FLIES.—Some years ago I made a small collection of our local Crane flies, but have only recently been able to complete my identifications, and that with the kind assistance of my friend Mr. H. Britten, F.R.E.S. *Limnobia nebeculosa* Meig., a

common species by the sides of burns, etc., in May and September. *L. flavipes* Fab., Newton Moss at the end of May, scarce. *Dicranomyia chorea* Mg., not uncommon, sometimes at rest on palings. My specimens were taken at the end of May. *D. autumnalis* Staeg., roadsides and on the peat mosses in May and September. *Trichocera regelationis* Lin. (the Winter Gnat), two on a window in April. *Rhiphidia maculata* Mg., Gretna, Nutberry Moss, etc., from mid May to July. *Ormosia pseudosimilis* Lundst., in damp situations in June. *O. varia* Mg., on Nutberry Moss in June and September. *Phalacrocer a replicata* Lin., in May on wet moors. *Molophilus ater* Mg., common in May on several of our moors. *M. niger* Goet., banks of the River Kirtle in May. *Erioptera trivialis* Mg., two on Newton Moss in May. *E. stictica* Mg., frequent from May until the end of August. It occurs on the sandy shores of the Solway, and banks of the River Kirtle on places frequently submerged by the tide. *Cheilotrichia cinerascens* Mg., on Newton Moss in August. *Limnophila meigeni* Verr., in a marshy place near Gretna at the end of June. *L. fulvivenosa* Schum., near Gretna in July. *Tricyphona immaculata* Mg., Quentin's Hill, Newton Moss, etc., in May. Not uncommon. *Pedicia rivosa* Lin., one on swampy ground on Newton Moss in July. *P. immaculata* Mg., by sides of burns in May, females predominating. *Pales flavescens* Lin., generally common in June and July. Has occurred on windows in the house. *P. quadrifaria* Mg., in June but less frequent than *flavescens*. *Tipula varipennis* Mg., one of our commonest species, by sweeping long grass in May and June. *T. rufina* Mg., common on a sleeper fence by the railway side near Gretna in late April. *T. unca* Wied., a male taken on a window in Gretna in July. *T. marmorata* Mg., a female on the banks of the River Kirtle in September. *T. obsoleta* Mg., swept from ditches in October; rare. *T. oleracea* Lin., taken in June. *T. paludosa* Mg., plentiful in fields, etc., in autumn. *T. vernalis* Mg., on a window in Gretna in May. *T. subnodicornis* Zett., on Newton Moss in May where there is an abundance of Cotton Grass. *T. lateralis* Mg., common in damp fields and on the moors in May.—JAS. MURRAY; 6, Burnside Road, Gretna, Dumfriesshire.

AGRION SPLENDENS IN WILTSHIRE.—We should like to place on record the occurrence of *Agrion splendens* Harris in considerable numbers in the Ashton Keynes district of Wiltshire. Along the small streams and ditches, and particularly the banks of the Isis, the dragonfly was abundant throughout June, so much so that we were astonished to find that it has not previously been recorded from this county. At dusk this splendid insect was to be taken at rest, wings closed above the thorax, when clinging to the leaves of hawthorn and other shrubs in the adjacent hedgerows. Our identification was confirmed by Mr. D. E. Kimmins of the British Museum and specimens have been deposited in the British and Manx Museums.—K. WILLIAMSON, W. S. COWIN; Kenwood, Brunswick Road, Douglas, I. of Man.

THE ENTOMOLOGIST

VOL. LXXIII.]

NOVEMBER, 1940.

[No. 930]

FURTHER NOTES ON THE OCCURRENCE OF *ORIA MUSCULOSA* DURING 1940.

By C. G. M. DE WORMS, PH.D., F.R.E.S.

MR. AUSTIN RICHARDSON, in a most interesting note (*Entomologist*, 73, 214), has already given an account of experiences with this insect this year following to some extent in the footsteps of Drs. Cockayne and Kettlewell, to whose illuminating article he referred, and whose report of their operations in 1938 and 1939, together with a survey of the species' history in this country and abroad, was of the greatest value to us in our efforts.

In these supplementary observations I have included several additional items, and endeavoured to establish a further link in our knowledge of this Wainscot's habits and habitats. I was fortunate enough to be stationed at Salisbury on Government work from early June, but I did not get an opportunity of searching for the larvae in cornfields. However, as it was an early season, I started looking for the imago with Mr. Haynes on July 22. We visited an arable field at dusk where this species had been taken the previous year, but saw no sign of it. We were naturally handicapped without lamps. I had a similar experience on four subsequent nights that week, walking round local wheat-fields at dusk. There seemed no sign of an early flight.

On July 28 Mr. Stanley Tyrrell, who drives Mr. Haynes, produced a moth which he said had flown into his car the previous night about 11 p.m., on his way home from Amesbury. To our surprise it was a fresh female *musculosa*, but to our disappointment it was dead.

I reported this capture to Mr. Richardson, at the same time advising him to try Mr. Gater's method on his way to this district, with the remarkable results he has described. I did not get a chance to follow his example till the afternoon of August 3, which was very warm and sunny. I visited the wheat-field which we had been to the previous evening and where Mr. Richardson had been successful. It was just being finished off. The *musculosa* had congregated in the centre and came out in a stream, many of them escaping my net. I subsequently proceeded to four other wheat-fields where the machines were on their final laps and found the insect in the same manner. Two fields had been grass crops

the previous season, one virgin pasture, another roots, which produced a single female, and finally by far the best had been barley. From this the farmer said the white moths had been flying out all day. As Mr. Richardson pointed out, the insect seems fairly sluggish, and when Mr. A. G. B. Russell came on August 5 I found one at rest on a sheaf, from which a strong kick failed to dislodge it. Mr. E. J. Hare also obtained some of the species the following day, but they were already getting worn, and it was evident it had been out much earlier than in 1939. Mr. R. Pitman obtained the final specimens of the season on August 10 south of Salisbury.

Like Mr. Richardson I farmed several females out on an assortment of cereals. When Dr. Kettlewell came on August 9 we went through these and he found a few batches of ova, dull yellow, laid in neat rows inside the sheath of a blade of wheat as described by the Russian authorities. This was a most valuable link in the chain, and it is hoped to breed through this species for the first time in this country.

Owing to the economic importance of the insect through the ravages of its larvae in cereal crops abroad, various theories have been put forward as to how it survives our rotation of arable land. From the fact that it appears to be entirely associated with cereals and to spend most of its time in cornfields, the probability is that *musculosa* lays its eggs in the straw, which subsequently gets carried to the stack, where they remain till the spring, when during threshing the straw gets distributed and the young larvae find their way into a new corn crop if nearby, or alternatively feed round the stack on corn sprouted from fallen grains. To find ova in cut straw stems would certainly support this view.

From our observations *musculosa* is abundant over a wide area round Salisbury, and probably extends its range right along the North Downs, possibly still occurring in its original haunts which gave it its name.

It is to be hoped that a complete solution will soon be found to the life history of this neglected native among our Lepidoptera.

12, Harcourt Terrace,
Salisbury;
September, 1940.

AUTUMNAL ARGYNNIS EUPHROSYNE.—I feel the following record will be of interest, as if it is not unique it is a very rare occurrence. On October 5 I bred out a perfect female *euphrosyne* which was a fairly good size and quite normal in markings and coloration. Despite our Butterfly Farm being in the front line and on the main aerial road to London, we are continuing to breed as many butterflies and moths as possible.—L. W. NEWMAN, F.R.E.S.; "Butterfly Farm," Bexley, Kent.

IRISH LEPIDOPTERA IN 1939.

By BRYAN P. BEIRNE, B.Sc., F.R.E.S., AND ARTHUR A. LISNEY,
M.A., M.D., F.R.E.S.

THE following is a list of Lepidoptera taken by us in Ireland during 1939 and includes one Agrotid, two Geometridae, one Tortrix and nine Tineina which, to the best of our knowledge, have not been recorded previously from Ireland, as well as a number of other rare Irish species. The list includes some 78 new county or vice-county records. Species recorded as common by Donovan in his list are not included here.

The genitalia of a large number of the species, chiefly Tineina, have been examined in order to confirm the identifications.

The second half of June and the first half of July were spent in the Killarney, co. Kerry, district, which we worked thoroughly. We visited also the Caragh and Kenmare districts, co. Kerry, and Glengarriff, co. Cork. During the day we collected larvae and Microlepidoptera, while after dark collecting was chiefly done at the car headlights, Muckcross and Tore being most easily worked by this means. We also kept a small moth trap going all night at Flesk. Except for the trap no collecting was done at light before the beginning of July. As is usual in Ireland sugar proved a disappointment, but the excellent results obtained by the use of light more than compensated for this.

During the second half of July we collected in a number of localities in co. Dublin and co. Wicklow, and did particularly well in the extensive coastal marsh between Greystones and Wicklow known as the Murrough, the Devil's Glen, Powerscourt demesne, and at Howth Head. Here again night collecting was mostly done by means of light. A moth trap at Seapoint, co. Dublin, produced several interesting species.

In the appended list records are grouped under their respective county and vice-county divisions. The following are those referred to with the appropriate symbols: South Kerry (SK), North Kerry (NK), West Cork (WC), Wicklow (WI), Dublin (DU), and Meath (ME).

PIERIDAE.—*Gonepteryx rhamni*, L. ME: Trim, a male seen on the wing, 27. viii.

NOTODONTIDAE.—*Cerura furcula*, L. NK: Muckcross, eight ova 6. vii. WI: The Murrough, six ova 24. vii. *Stauropus fagi*, L. SK: Dromore, four larvae on beech and oak 10. vii and 11. vii. *Pheosia gnoma*, Fabr. (*dictaeoides*, Esp.). SK: Dromore, one full-grown

larva on birch which produced an imago 11.viii. NK : Muckcross, one full-grown larva and several ova 6.vii.

THYATIRIDAE.—*Tethea fluctuosa*, Hübn. NK : Torc, at light, three 8.vii, six 9.vii, two 10.vii. *Achyla flavicornis*, L. SK : Caragh, one larva 8.vii. NK : Muckcross, two larvae 6.vii.

LYMANTRIIDAE.—*Leucoma salicis*, L. WI : The Murrough, one at rest on sallow 25.vii. Previous Irish records doubtful. A large white moth which we saw several times at dusk the previous evening was probably this species.

LASIOCAMPIDAE.—*Philudoria potatoria*, L. WI : The Murrough, common.

ARCTIIDAE.—*Comacla senex*, Hübn. WI : The Murrough, fairly common 24.vii and 25.vii. It appears to fly in some numbers at about 1 a.m. and comes to light. There are two previous Irish records, single specimens taken near Enniskillen, co. Fermanagh and Cappagh, co. Waterford. *Lithosia quadra*, L. NK : Cahernane ; Flesk ; Kenmare demesne and Muckcross, Killarney. *Eilema deplana*, Esp. NK : Torc, at light, one 8.vii, three 9.vii, five 10.vii. All except one are the var. *unicolor*, Bankes. *E. lurideola*, Zinck. WI : Devil's Glen, three 22.vii ; The Murrough, three 24.vii, one 25.vii ; DU : Howth, three 17.vii.

AGROTIDAE.—*Agrotis lunigera*, Steph. DU : Howth, one 17.vii. *Amathes c-nigrum*, L. NK : Cloghereen, one 3.vii. *Diarsia dahlvi*, Hübn. NK : Muckcross, one at light, 4.vii. *Polia nebulosa*, Hufn. NK : Cloghereen, two 3.vii, two 7.vii ; Torc, one 8.vii, four 9.vii. *Thalophila matura*, Hufn. WI : The Murrough, two 24.vii. *Procus furuncula*, Schiff. (*bicoloria*, Vill.). DU : Howth, 17.vii, common. *Coenobia rufa*, Haw. WI : The Murrough, three 24.vii, one 25.vii. There are only two previous Irish records for this rare species—Claring Bridge, Galway, and Powerscourt, co. Wicklow (Kane). *Leucania straminea*, Treits. WI : The Murrough, three 24.vii, two 25.vii ; also a very rare species. *L. pudorina*, Haw. (*impudens* Hübn.). NK : Muckcross, one 9.vii at flowers of heather. A very rare species. Donovan states : "I consider this wainscot to have a very slender claim to the Irish list." There are four previous Irish records. *Amphipyra pyramidea*, L. DU : Seapoint, one at light 10.ix. *Jaspidea pygarga*, Hufn. (*fasciana*, L.). SK : Caragh. NK : Killarney district, abundant. *Eustrotia uncula*, Clerck. NK : Cahernane, two 21.vi, one 6.vii ; Flesk, one at light 22.vi. *Polychrisia moneta*, Fabr. DU : Seapoint, one at light in a moth trap 20.vii. The specimen was in perfect condition. This is the first Irish record for this migrant species. *Plusia festucae*, L. WI : Devil's Glen, one 22.vii. *Bomolocha fontes*, Thunb. NK : Killarney district, common. WC : Glengarriff. *Schrankia costaestrigalis*, Steph. NK : Cloghereen, one 3.vii, three 7.vii ; Muckcross, one

4.vii, three 9.vii, two 10.vii; Torc, one 5.vii, four 8.vii, five 9.vii. *Tholomiges turfosalis*, Wolke. NK: Cloghereen, very common flying at dusk 7.vii.

GEOMETRIDAE.—*Hemithea aestivaria*, Hübn. NK: Cahernane, one 6.vii; Muckross, one 7.vii; Torc, two 10.vii. DU: Shankill, one 2.vii. *Scopula immutata*, L. NK: Cahernane, 3.vii; Cloghereen, 7.vii; Torc, 5.vii; Muckross, 4.vii. WC: Glengarriff, 9.vii. WI: The Murrough, 24.vii and 25.vii. Frequent in all these localities. *Cosymbia linearia*, Hübn. WC: Glengarriff, one 9.vii. *C. pendularia*, Clerck. WC: Glengarriff, one 9.vii. *Nothopteryx carpinata*, Borkh. SK: Caragh, three larvae 6.vii, one imago bred. *Triphosia dubitata*, L. NK: Cahernane, one 10.vii. *Colocalpe undulata*, L. NK: Muckross, one 9.vii. *Philereme vetulata*, Schiff. NK: Kenmare demesne, one 28.vi, three 7.vii, two 10.vii. Not recorded previously from Ireland. *Ecliptopera silaceata*, Schiff. NK: Cahernane, two 21.vi, one 3.vii; Torc, one 10.vii. This scarce species, with a distribution mainly limited to the northern half of Ireland, has not been previously recorded from co. Kerry. *Lygris prunata*, L. DU: Shankill, single specimens 2.vii and 12.vii, two 21.vii and one 26.vii. *Chloroclysta siterata*, Hufn. NK: Torc, one larva 5.vii. Imago bred. *Venusia cambrica*, Curt. NK: Cloghereen, one 3.vii; Muckross, one 10.vii; Torc, one 8.vii, three 9.vii, three 10.vii. All at light. A scarce species in Ireland. *Euphyia unangulata*, Haw. NK: Cahernane, single specimens 23.vi and 10.vii; Torc, one 8.vii. *Perizoma alchemillata*, L. WI: Powerscourt, one 18.vii. *P. taeniata*, Steph. SK: Caragh. NK: Killarney district, common. *Orthonoma lignata* Hübn. (*vittata*, Borkh. *nec.* Thun.). WI: Powerscourt, one 8.vii. *Eupithecia subnota*, Hübn. WI: The Murrough, one 24.vii. *E. plumbeolata*, Haw. WI: The Quill, 9.vi. *E. tenuiata*, Hübn. WI: The Murrough, one 24.vii, three 25.vii. *Chloroclystis debiliata*, Hübn. SK: Ardtully; Caragh. NK: Cloghereen, Muckross and Torc. Common in all these localities. *Ligdia adustata*, Schiff. NK: Cahernane, one 6.vii. A scarce species in Ireland. *Hygrochroa syringaria*, L. NK: Cloghereen, one 3.vii; Torc, two at light 9.vii. Another very rare species. *Angerona prunaria*, L. NK: Cromaglan Glen, 25.vi; Derrycunihy, 26.vi; Muckross, four 23.vi and several seen 4.vii. *Semiothisa notata*, L. NK: Muckross, one 23.vi. *Biston strataria*, Hufn. SK: Caragh, two larvae 8.vii; Dromore, one larva 10.vii. NK: Kenmare demesne, one larva 7.vii. Mr. E. Bullock has captured an imago at light at Killarney. WC: Glengarriff, one larva 9.vii. *Cleora cinctaria*, Schiff. NK: Cahernane, one larva 4.vii. Imago bred. *C. ribeata*, Clerck. (*abietaria*, Hübn.). WI: Devil's Glen, three at light 22.vii. Not previously recorded from Ireland. *C. repandata*, L. Common,

the ab. *conversaria*, Hübn. as follows. NK : Cloghereen, one 3.vii ; Muckcross, two 9.vii ; Tore, one 6.vii, four 8.vii, two 9.vii and one 10.vii. WI : Devil's Glen, three 22.vii. *Itame vacuaria*, L. DU : Howth, one 17.vii ; Seapoint, frequent.

SESIIDAE.—*Aegeria scoliaeformis*, Borkh. NK : Long Range, a pair at rest in a birch trunk 7.vii. The birch trees along the sides of the road and in Cromaglan Glen are infested with the larvae of this species and a great many empty pupa cases and exit holes were seen. Birchall and Kane also noted the larvae from this locality.

COSSIDAE.—*Cossus cossus*, L. Trees attacked by the larvae of this species were noted in the following localities :—NK : Cahernane, the Long Range and Muckcross.

PHYCITIDAE.—*Pempelia dibutella*, Hübn. DU : Howth. *Phycita spissicella*, Fäb. NK : Cahernane. *Homoeosoma binaevella*, Hübn., Flesk. *Crambus pinellus*, L. NK : Cromaglan Glen. *C. inquinatellus*, Schiff. SK : Ardtully. NK : Cahernane ; Cloghereen ; Ballast pits and Muckcross, Killarney. The Wicklow record is the first from outside the south-west of Ireland.

PYRAUSTIDAE.—*Phlyctaenia fuscalis*, Schiff. NK : Flesk. WI : Kilmacanogue Marsh. *Platyptilia cosmodactyla*, Hübn. WI : Devil's Glen. *P. acanthodactyla*, Hübn. SK : Dromore. NK : Derry-cunihy. *P. pallidactyla*, Haw. NK : Flesk and Ballast pits, Killarney. DU : Howth.

PSYCHIDAE : *Fumea casta*, Pall. SK : Caragh and Dromore. NK : Killarney district, common.

TORTRICIDAE.—*Lozopera francillana*, Fab. DU : Howth, common on the cliffs, the only known Irish locality. *Phalonia cnicana*, Doubl. WI : The Murrough. *P. nana*, Haw. NK : Cloghereen. *Euxanthia angustana*, Hübn. WI : The Murrough. *E. straminea*, Haw. NK : Flesk. *E. zoegana*, L. WI : The Murrough. DU : Howth. *E. hamana*, L. DU : Howth. *Batodes angustiorana*, Haw. NK : Flesk and Muckcross. *Capua grotiana*, Fab. WI : Devil's Glen. *Cacoecia xylosteana*, L. NK : Cahernane and Cloghereen. *Pandemis corylana*, Fab. SK : Caragh. NK : Kenmare demesne. *Tortrix paleana*, Hübn. NK : Cahernane and Muckcross. DU : Howth and St. Ann's, Clontarf. *T. costana*, Fab. WI : The Murrough. *Olinda ulmana*, Hübn. NK : Cahernane and Kenmare demesne. *Peronea contaminana*, Hübn. NK : Cromaglan Glen. *P. aspersana*, Hübn. SK : Dromore. *P. hastiana*, L. SK : Dromore. WC : Glengariff.

EUCOSMIDAE.—*Gypsonoma dealbana*, Fröl. WC : Glengariff. WI : Devil's Glen. *Notocelia uddmanniana*, L. WI : Devil's Glen. *N. roborana*, Treits. DU : Howth. *Eucosmia cruciana*, L. NK : Cahernane and Cromaglan Glen. *E. cana*, Haw. NK : Muckcross. WI : The Murrough. DU : Howth. *E. farfaræ*, Fletcher

(*brunnichiana*, Fröl.) NK : Muckcross and Ross Island. *E. pflugiana*, Haw. NK : Cahernane. WI : The Murrough. *Polychrosis littoralis*, Curt. DU : Howth. *Endothenia oblongana*, Haw. WI : The Murrough. The second Irish record, previously recorded from Cahernane, Killarney (Beirne). *E. antiquana*, Hübn. DU : Howth. *Argyroplote betuleтана*, Haw. SK : Caragh. NK : Cloghereen and Torc. *A. pruniana*, Hübn. NK : Cahernane. WI : Devil's Glen. *A. aurifasciana*, Haw. (*latifasciana*, Haw.). NK : Cloghereen. *A. profundana*, Fab. SK : Dromore. *Hemimene alpinana*, Treits. NK : Ballast pits, Killarney, 9.vii. Not recorded previously from Ireland. *Pammene juliana*, Curt. NK : Cahernane, two. There is a single previous Irish record, one taken by Cusack on Bray Head, co. Wicklow (Halbert). *Laspeyresia woebiana*, Schiff. NK : Ross Island. *L. perlepidana*, Haw. DU : St. Ann's, Clontarf.

GELECHIDAE.—*Paltodora cytisella*, Curt. SK : Dromore, abundant. NK : Cahernane. WI : Wicklow Head. Recorded from Killarney (Kane and Beirne). *Aristotelia tenebrella*, Hübn. NK : Cahernane 22.vi and 23.vi, Flesk 6.vii. Not previously recorded from Ireland. *Telephusa vulgella*, Hübn. DU : Seapoint. *Gelechia betulea*, Haw. (*ericetella*, Hübn.). NK : Derrycunihy. WI : The Quill. DU : Howth. *Stomopteryx anthyllidella*, Hübn. DU : St. Ann's, Clontarf. *S. sangiella*, Staint. DU : Seapoint. *S. vorticella*, Scop. NK : Ballast pits, Killarney, 9.vii. Not recorded previously from Ireland. *Acompsia cinerella*, Clerck. SK : Ard-tully. WI : Powerscourt. *Oecogonia quadripuncta*, Haw. DU : Howth, common on the cliffs. The only known Irish locality. *Brachmia rufescens*, Haw. WI : The Murrough. DU : Howth and Seapoint. A single previous Irish record, one from Seapoint (Beirne).

COSMOPTERYGIDAE.—*Limnoecia phragmitella*, Staint. WI : The Murrough and Powerscourt, very common in the former locality. A single previous Irish record, larvae taken on the Murrough by Cusack (Halbert). *Chrysoclista atra*, Haw. NK : Muckcross. *Spu-leria flavicaput*, Haw. (*aurifrontella*, Hübn.). DU : St. Ann's, Clontarf. *Mompha locupletella*, Schiff. (*schrunkella*, Hübn.). SK : Dromore.

BLASTOBASTIDAE.—*Blastobasis lignea*, Wals. DU : Howth.

OECOPHORIDAE.—*Chirocampa lambdella*, Don. NK : Cromaglan Glen and Derrycunihy. *Borkhausenia similella*, Hübn. NK : Torc 24.vi. Not recorded previously from Ireland. *B. flavifrontella*, Hübn. NK : Cahernane, Cromaglan and Torc. A single previous Irish record, one from Powerscourt, co. Wicklow (Beirne). *Exaeretia allisella*, Staint. DU : Howth. A single previous Irish record, Sandymount, co. Dublin (Beirne). *Depressaria liturella*, Schiff. DU : Howth.

ELACHISTIDAE.—*Elachista albifrontella*, Hübn. NK : Torc. DU : St. Ann's, Clontarf. *E. taeniatella*, Staint. SK : Caragh. A single previous Irish record, Howth (Kane).

HYPONOMEUTIDAE.—*Swammerdamia lutarea*, Haw. NK : Cahernane. WI : Wicklow.

EUPISTIDAE.—*Eupista (Coleophora) spissicornis*, Haw. NK : Flesk. *O. alcyonipennella*, Koll. DU : Howth. *E. nigricella*, Steph. DU : Howth. *E. orbitella*, Zell. NK : Cromaglan Glen. Not previously recorded from Ireland. *E. lutipennella*, Zell. SK : Caragh. NK : Cromaglan. WC : Glengarriff. *E. albidella*, Herr. Schaff. WI : The Murrough. Meyrick has "Britain to the Orkneys, Ireland, rather common," but we can find no other Irish record. *E. discordella*, Zell. NK : Ballast pits, Killarney. *E. albicosta*, Haw. DU : St. Ann's, Clontarf. *E. apicella*, Staint. (*lineola*, Meyr. nec Haw.). NK : Flesk. *E. laripennella*, Zett. (*annulatella*, Tengst.). DU : Howth. *E. galactaula*, Meyr. (*alticottella*, Zell.). NK : Cloghereen, Derrycunihy and Ross Island. Not recorded previously from Ireland. *E. glaucicolella*, Wood. SK : Caragh and Dromore. NK : Cahernane and Cloghereen. *E. tamesis*, Waters. NK : Ballast pits, Killarney, four 9.vii. This rare species has been recorded only from co. Dublin (Beirne) and from Oxford.

GRACILARIADAE.—*Lithocolletis messaniella*, Zell. DU : St. Ann's, Clontarf. *L. alnifoliella*, Dup. SK : Dromore. *L. nigrescentella*, Logan. DU : St. Ann's, Clontarf. *L. kleemannella*, Fabr. NK : Cahernane, Cromaglan, Ross Island and Torc. Only recorded previously from Kilmacanogue, co. Wicklow (Halbert and Beirne). *Gracilaria auroguttella*, Steph. SK : Dromore. *G. phasianipennella*, Hübn. NK : Flesk. *G. sulphurella*, Haw. DU : St. Ann's, Clontarf. *G. elongella*, L. SK : Dromore. *G. alchimella*, Scop. NK : Cloghereen and Torc. *G. stigmatella*, Fäbr. SK : Dromore. NK : Flesk.

PLUTELLIDAE : *Cerostoma xylostella*, L. SK : Dromore. WC : Glengarriff. *C. nemorella*, L. NK : Cloghereen, Muckcross and Torc.

LYONETIDAE.—*Opostega salaciella*, Treits. NK : Cahernane and Flesk, three at light. A single previous Irish record, one from Cahernane (Beirne). *O. crepusculella*, Zell. WI : The Murrough. *Tischeria complanella*, Hübn. NK : Cromaglan Glen. *T. dodonaea*, Heyd. SK : Dromore, 10.vii. Not recorded previously from Ireland. *Bucculatrix cidarella*, Zell. NK : Cromaglan, Flesk and Muckcross, common in the last locality. Not recorded previously from Ireland.

TINEIDAE.—*Monopis ferruginella*, Hübn. NK : Flesk. DU : Seapoint and Howth. *Tinea cloacella*, Haw. NK : Flesk and Torc.

DU : Shankill and St. Ann's, Clontarf. *T. ruricolella*, Staint. NK : Cahernane. Not recorded previously from Ireland. *T. semifulvella*, Haw. NK : Cloghereen, Cromaglan and Torc. *Ochsenheimeria bisontella*, Zell. NK : Caragh. *Luffia lapidella*, Göze. The case-bearing larvae of this species occur in enormous numbers on the outside walls of St. Ann's, Clontarf, co. Dublin, at the Doly-mount bus terminus. Not recorded previously from Ireland. The larvae were first pointed out to us by Mr. E. O'Mahony, of the National Museum, Dublin.

LAMPRONIDAE.—*Phylloporia bistrigella*, Haw. SK : Dromore. NK : Muckross. *Lampronia oehlmanniella*, Treits. SK : Caragh. *L. praelatella*, Schiff. NK : Cahernane, Muckross and Torc. *L. luzella*, Hübn. NK : Muckross.

NEPTICULINA.—*Nepticula aurella*, Staint. NK : Torc. *N. submaculella*, Haw. NK : Cahernane. *Scoliaula quadrimaculella*, Boh. SK : Dromore.

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PAPILIO MACHAON IN SUSSEX AND KENT.—With reference to *Entomologist*, **73** : 213–4, a Swallowtail was captured at Rye on July 24 by a boy (Capt. L. A. Vidler) ; a male in fair condition was seen at Herne Bay on August 5 (A. J. L. Bowes) ; and on September 5 and 7 two nearly full-fed larvae were found on cultivated carrots in a Hastings town garden (Rev. C. C. Dobson). The last is the only record of a second brood found in Sussex.—(Capt.) T. DANNREUTHER ; “Windycroft,” Hastings, Sussex, September 10, 1940.

STRYMON W-ALBUM IN WALES.—South, in his *Butterflies of the British Isles*, says of this insect that “it has also been obtained in Monmouthshire, but its extreme western limit seems to be Weston-super-Mare, Somersetshire.” He also mentions July as the month in which to find it. But on June 24 I found numbers flying about early bramble blossom on the banks of the R. Usk near Crickhowell, Breconshire. Some had evidently been out some days, as they were worn. The females were remarkably large. Most butterflies have been early and extremely plentiful this year. *Argynnis paphia* was out on June 15. *Polygonia c-album* is one of the most common butterflies in gardens, woods, and lanes. I have never seen them so plentiful. *Pieris brassicae* is a plague again this year.—B. TULLOCH (Brig.-Gen.) ; Hill Court, Abergavenny, September 16.

NOTES ON BRITISH ODONATA IN 1938 AND 1939.

BY J. COWLEY, F.R.E.S.

ON many of the occasions noted below I have had the assistance of Miss D. Ross, as in previous years, and to her are due a number of the records, without which this list would be much the poorer. On August 15, 1939, I had the pleasure of meeting Miss C. Longfield at Byfleet, and observations for that date must be credited to her also. The records below given as Woking and Byfleet refer to the Basingstoke Canal at Woking and Byfleet, Surrey. East and West Sussex are the Watsonian vice-counties, and not the County Council areas.

Platycnemis pennipes Pallas.—Byfleet, June 20, 1938 (1 ♂), Aug. 15, 1939 (1 ♂); R. Arun, Bedham, W. Sussex, June 25, 1938 (*in copula*); R. Wey, Pyrford, Surrey, July 28, 1938.

Pyrrosoma nymphula Sulzer.—Broadmoor, near Dorking, Surrey, June 15, 1938; Run Common, near Cranleigh, Surrey, June 17, 1938; Coldharbour, Leith Hill, Surrey, June 18, 1938; Byfleet, June 20, 1938 (ovipositing), July 11, 1939 (1 ♂); R. Arun, Bedham, W. Sussex, June 25, 1938 (*in copula*); Buxted, E. Sussex, May 31, 1939.

Ischnura elegans Van der Linden.—Norwood Hill, Horley, Surrey, June 11, 1938 (1 ♀ emerging); Cuckmere River, Litlington, E. Sussex, June 16, 1938 (*in copula*); Byfleet, June 20 (ovipositing), Aug. 16 (numerous), Aug. 23 (numerous, *in copula*), Sept. 6 and 13 (few), Sept. 15, 1938 (very few), July 11, Aug. 15, 1939 (ovipositing); R. Arun, Bedham, W. Sussex, June 25, 1938; R. Wey, Pyrford, Surrey, July 28, 1938; Westcott, Surrey, Aug. 4, 1938, Aug. 13, 1939 (few); Woking, July 11, 1939; Newdigate, Surrey, Aug. 18, 1939. ♀-f. *rufescens* Stephens, R. Arun, Bedham, W. Sussex, June 25, 1938; R. Wey, Pyrford, Surrey, July 28, 1938; Byfleet, Aug. 23, 1938. ♀-f. *infuscans* Campion, Cuckmere River, Litlington, E. Sussex, June 16, 1938; R. Arun, Bedham, W. Sussex, June 25, 1938; Byfleet, Aug. 16 and 23, Sept. 6, 1938. ♀-f. *infuscans-obsolata* Killington, Byfleet, June 20, Aug. 16 and 23, Sept. 6, 1938; R. Arun, Bedham, W. Sussex, June 25, 1938. At Byfleet, Aug. 15, 1939, was seen what appeared at first sight to be quite a chain of dragonflies flying, and on capture the "chain" proved to be three *I. elegans*, a female between two males, the anterior male attached *per collum* to the female, the posterior male *in copula* (second segment of ♂ connected to genitalia of ♀) with the female. Miss Longfield suggested that the female was originally attached *per collum* and *in copula* with the posterior male, and that

the anterior male had in some way displaced the other from the female's prothorax; both for (as to the genitalia) and against (as to the prothorax) this suggestion is the fact that in *I. elegans*, and indeed perhaps in many species of the genus (as I have seen in dried pairs of exotic species), the copulatory hold is very secure, the pair usually remaining together in the net and in the hand, and often even after immersion in spirit; the attachment by the female genitalia seems, if anything, to be somewhat stronger than that by the prothorax; on the other hand, in *C. puella* the hold by the female genitalia is almost always released on capture, while that by the prothorax is frequently retained, and in *P. nymphula* it is most usual to find that a pair have separated at once in the net.

Enallagma cyathigerum Charpentier.—Byfleet, June 20 (very few), Aug. 16 (numerous, ovipositing), Aug. 23 (few), Sept. 6 (1 ♂), Sept. 13, 1938 (few), July 11 (few), Aug. 15, 1939 (ovipositing); Ockham Common, Surrey, July 28, 1938; Frensham Little Pond, Surrey, Aug. 30, 1938.

Coenagrion pulchellum Van der Linden.—Byfleet, June 20, 1938 (ovipositing), July 11, 1939 (few). ♀-f. *nigrescens* Puschign, Byfleet, June 20, 1938.

C. puella Linnaeus.—Westcott, Surrey, June 1, 1938 (teneral); Charlwood, Surrey, June 14, 1938 (ovipositing); Run Common, near Cranleigh, Surrey, June 17, 1938 (ovipositing); Byfleet, June 20 (ovipositing), Aug. 16, 1938 (few), July 11, 1939; R. Arun, Bedham, W. Sussex, June 25, 1938 (*in copula*); Holmwood Common, Surrey, June 26, 1938.

Erythronma najas Hansemann.—Westcott, Surrey, June 1, 1938 (teneral and subadult); Byfleet, June 20 (ovipositing), Aug. 16 (few, ovipositing), Aug. 23, 1938 (very few, ovipositing), July 11 (few), Aug. 15, 1939 (1 ♂).

Lestes sponsa Hansemann.—Byfleet, Aug. 23, 1938, two dragonflies which flew up from bushes high into the air may have been tenerals of this species, Aug. 15, 1939 (1 ♂); Ockham Common, Surrey, Aug. 15, 1939; Newdigate, Surrey, Aug. 18, 1939.

Agriion virgo Linnaeus.—Buxted, E. Sussex, May 31, 1939 (teneral).

A. splendens Harris.—Cuckmere River, Litlington, E. Sussex, June 16, 1938; Byfleet, June 20, 1938 (1 ♂), Aug. 15, 1939 (1 ♂); R. Arun, Bedham, W. Sussex, June 25, 1938 (*in copula*); R. Wey, Pyrford, Surrey, July 28, 1938.

Brachytron pratense Müller.—Byfleet, June 20, 1938 (ovipositing); R. Arun, Bedham, W. Sussex, June 25, 1938.

Aeshna juncea Linnaeus.—Byfleet, Sept. 13, 1938, probably this species.

A. grandis Linnaeus.—Coldharbour, Leith Hill, Surrey, July 22,

1938; Westcott, Surrey, Aug. 4, 1938, Aug. 13, 1939 (teneral); Byfleet, Aug. 16 (1 ♀ adult, 1 exuviae), Aug. 23 (ovipositing), Sept. 13, 1938, Aug. 15, 1939 (ovipositing, 1 ♀ exuviae); Woking, Sept. 15, 1938; Ockham Common, Surrey, Aug. 15, 1939; Newdigate, Surrey, Aug. 18, 1939; Kew Gardens, Surrey, Aug. 22, 1939.

A. cyanea Müller.—Norwood Hill, Horley, Surrey, July 22 (exuviae), Aug. 8 (last exuviae seen), Sept. 12 and 14 (ovipositing), Sept. 23, 25, Oct. 23, 1938 (1 ♂), July 7 (exuviae), Aug. 6, 17 (last exuviae), Aug. 25 and 27 (ovipositing), Oct. 16, 1939; Abinger, Surrey, Sept. 13, 1938; Coldharbour, Leith Hill, Surrey, Sept. 17, 1938 (ovipositing).

A. mixta Latreille.—Byfleet, Aug. 16 (exuviae only, 4 ♂, 8 ♀, 1 ♀ larva about to emerge), Aug. 23 (doubtfully seen), Sept. 6 (3 ♂ seen, one just emerged ♂ with exuviae, a dull day with drizzle), Sept. 13 (*in copula*), Sept. 15, 1938 (♂♂ numerous, only 4 ♀ seen, 3 *in copula*), Aug. 15, 1939 (5 ♀ exuviae); R. Wey, Pyrford, Surrey, Sept. 13, 1938 (1 ♂ subadult); Woking, Sept. 15, 1938 (*in copula*).

Anax imperator Leach.—Byfleet, June 20, 1938; R. Arun, Bedham, W. Sussex, June 25, 1938; Woking, July 11, 1939; Newdigate, Surrey, Aug. 18, 1939.

Cordulia aenea Linnaeus.—Byfleet, June 20 (ovipositing), Aug. 23, 1938 (either this species or *S. metallica*, very few), July 11, 1939 (few).

Somatochlora metallica Van der Linden.—Byfleet, June 20 (quite numerous, ovipositing, one exuviae found on *Equisetum* about 15 ft. from the water's edge), Aug. 16, 1938 (1 ♂), July 11, Aug. 15, 1939 (few).

Orthetrum coerulescens Fabricius.—Byfleet, Aug. 16, 1938 (1 ♂ adult).

O. cancellatum Linnaeus.—Cuckmere River, Litlington, E. Sussex, June 16, 1938 (*in copula*).

Libellula quadrimaculata Linnaeus.—Byfleet, June 20, 1938 (ovipositing).

L. depressa Linnaeus.—Charlwood, Surrey, June 14, 1938 (adult); Run Common, near Cranleigh, Surrey, June 17, 1938; Holmwood Common, Surrey, June 26, 1938; Buxted, E. Sussex, May 31, 1939; Byfleet, July 11, 1939 (1 ♂); Polesden Lacey, Surrey, July 12, 1939.

L. fulva Müller.—R. Arun, Bedham, W. Sussex, June 25, 1938. Here we visited about a mile of river opposite Pallingham Quay, and about a mile to two miles lower down than our visit in 1937 (1938, *Entomologist*, 71 : 109), in search of *L. fulva* and *Gomphus vulgatissimus* Linnaeus. This latter species was not seen (it has also been recorded from further down the river in 1914 and 1918 by Hall, 1939, *J. Soc. Brit. Ent.*, 2 : 25, so that it would appear

to be a regular resident on the Arun), but of *L. fulva* four males were seen; the day was not at all favourable, being cold and windy with little sun. The Arun colonies of these two rare dragonflies should certainly be carefully preserved.

Sympetrum striolatum striolatum Charpentier.—R. Wey, Pyrford, Surrey, July 28, 1938 (teneral); Byfleet, Aug. 16 (teneral and subadult), Aug. 23, Sept. 13, 1938 (ovipositing), Aug. 15, 1939 (ovipositing); Woking, Sept. 15, 1938 (ovipositing); Holmwood Common, Surrey, Sept. 17, 1938; Westcott, Surrey, Aug. 13, 1939 (teneral); Ockham Common, Surrey, Aug. 15, 1939; Newdigate, Surrey, Aug. 18, 1939 (subadult).

S. sanguineum Müller.—Ockham Common, Surrey, Aug. 15, 1939 (the most mature and plentiful of the three *Sympetrum* species); Newdigate, Surrey, Aug. 18, 1939 (adult).

S. danae Sulzer.—Ockham Common, Surrey, Aug. 15, 1939 (1 ♀).

Norwood Hill House,
Horley, Surrey;
August 10, 1940.

EUPHYDRYAS AURINIA IN SNOWDONIA.—On September 28 last my wife, Mr. A. J. Merchant, Mr. S. H. Brooklesby and myself were collecting on one of the southern mountains of the Snowdon range. At an elevation of 750 ft. my wife found a nest of *E. aurinia* larvae. Further search by the four of us discovered about a dozen nests confined to an area of not more than half an acre. This butterfly has only formed one other colony in North Wales, near Dolgelly, over fifty miles distant, and on low lying ground, so we are hoping that resulting imagines may produce a new form of local variation. Is this possibly the highest recorded altitude for *aurinia* in Great Britain?—J. ANTONY THOMPSON, M.A., F.Z.S., F.R.E.S.; Roe Wen, North Wales, October 1, 1940.

DEATH'S HEAD HAWK IN CHESHIRE, 1940.—Two specimens of *Acherontia atropos* have reached me during the present year. The first I received on May 17 from Mr. J. E. Robinson, LL.B., of Dean Row, Wilmslow, having been taken a few days earlier in Wilmslow village. It has not been possible to get absolutely certain information as to its capture, but it would seem to have fallen off a local greengrocer's van, perhaps in a dying condition. As regards the second specimen, this was taken on June 3, by Mr. B. L. Jacobsen on the red brick wall of his house at Bramhall. It was noticed about 9.30 a.m., and was still in the same position at 7.30 p.m., when it was boxed. Next morning it was brought into the Manchester Museum, but was then evidently moribund, if not dead; it later came into my hands through the kindness of Mr. G. J. Kerrich, M.A. The specimens are in very fair condition, although not quite perfect. Both Wilmslow and Bramhall are comparatively close to Stockport.—L. NATHAN, F.R.E.S.; 19, Monton Street, Manchester 14, September 30, 1940.

SOME NOTES ON THE CYNIPID GENUS *NEUROTERUS*.

BY M. NIBLETT.

THESE notes on the Cynipid genus *Neuroterus* are a record of my observations on the galls and the insects I have bred from them. All localities given are in Surrey unless otherwise stated.

Neuroterus lenticularis Oliv.—There is no point in giving localities where the gall of this species occurs ; it is fairly safe to assert that it may be found wherever the oaks *Quercus sessiliflora* Salb. and *Q. robur* L. grow. I have found them on the former in 9, and on the latter in 48 localities.

The earliest date I have found the galls is June 26, when they were just recognizable ; they frequently stay attached to the leaves late into the autumn. My first observations of this gall were made in 1925, and each year since then I have found them to occur in considerable numbers. I have noted in some years a local scarcity, but in other localities, often near by, there was no lack of them.

The gall-wasp I have had emerge in early March. Adler (1) found that they emerged mostly in April and a few in early May ; he also obtained some in November and December, but these were artificially forced. On October 1, 1938, I found a number of these galls infested by the larvae of a Cecidomyid ; these were yellowish coloured and occupied burrows on the underside of the gall ; these larvae left the galls and pupated in the earth, the midges emerging July 17, 1939 ; they are in all probability *Parallelodiplosis galliperda* F. Loew.

N. baccharum L.—The same remarks as to localities referred to in respect of *N. lenticularis* also apply here. The galls occur upon the catkins and the leaves ; of the former the earliest date on which I have found them is May 7 on both *robur* and *sessiliflora*, and the latest June 18. The leaf-galls I have found as early as April 23, while galls containing parasitized larvae remain on the leaves often until late in the year, October 19 being the latest I have found them, Chalcids emerging from these galls in the following April.

All the *baccharum* I have bred have emerged in the latter half of May. Again my emergences are earlier than those had by Adler ; Kieffer (2) states that it emerges in June, rarely at the end of May ; Riedel (3) from the end of May to the beginning of June.

I have found these galls to occur in considerable numbers as a rule on both leaves and catkins. In 1934 I found a scarcity of leaf-galls, but they were abundant on the catkins.

N. fumipennis Htg.—The galls of this species appear to be rather local in their occurrence, but are usually to be found in some numbers where they do occur. I have found them on *Q. robur* at Epsom Downs, Effingham Common, Ockham, Arbrook Common, Walton Heath, Epsom Common, Carshalton, Bookham Common and Wimbledon Common; also at Brockenhurst, Hants. On *Q. sessiliflora* at Croham Hurst and Friday Street. The earliest date they were found was July 16, and the latest November 21. From one series of galls taken on October 19 I had the gall-wasp emerge from April 26 to May 28, from another series collected November 21 the insects emerged on April 10.

N. tricolor Htg.—The galls of this, the alternate sexual generation of the last-mentioned species, I have found up to the present only on *Q. robur* at Epsom Common, Leatherhead, Wimbledon Common, Limpsfield Chart, Bookham Common, Burgh Heath, Epsom Downs, Arbrook Common and Headley. Only on three occasions have they been found in any numbers; the earliest date I have found this gall is May 29, and the latest October 10.

All the emergences of *tricolor* I have had have been in the first week of July. They seem to suffer rather heavily from the attacks of Synergi and Chalcids, which I have had emerge about the same time as the gall-wasps.

N. numismalis Oliv.—This is another species which usually occurs in profusion wherever oaks are to be found; of 40 localities my records for the last 14 years show it to be fairly plentiful to abundant in all except about a dozen. It is to be found on both oaks. The earliest date I have observed this gall is July 4, when it was just possible to be sure of the identity by examining with a lens. I have found it still on the leaves as late as November 10.

The gall-wasp I have had emerge in the latter half of March of the second year; Chalcids I found took a heavy toll of their larvae, these emerging in March, April and May.

N. vesicatrix Schlct.—Considering the general abundance of *numismalis* galls it is rather surprising that the gall of *vesicatrix* does not occur with greater frequency; it certainly does not catch the eye readily, but is not likely to be overlooked when systematic search is carried out. I have found them on *Q. robur* at Kingswood, Bookham Common, Beddington, Ranmore Common, Epsom Downs, Ashted Common, Walton Heath, Coulsdon Common, Boxhill, Epsom Common, Riddlesdown, West Wickham Wood, Burgh Heath and Limpsfield Chart; also at Epping Forest, Essex; on *Q. sessiliflora* at Kingswood, Friday Street, Croham Hurst and Worms Heath. The earliest date I have found the gall is May 16; the gall-wasp I have had emerge in the last week in May and the first week in June; galls found without emergence holes later in

June usually contain parasitized larvae from which Chalcids emerge during July.

N. laeviusculus Schenck.—The galls of this species are usually to be found more or less plentifully where oaks grow. I have found them on *Q. robur* in some 30 odd localities and on *Q. sessiliflora* in 6; they are often rather later in appearing in numbers than the other spangle galls. In 1933 they did not appear in any numbers until the end of August and were plentiful in September and October; in 1938 they did not become plentiful until after October 1. The earliest date I have found this gall is July 16—an exceptionally early one in my experience—and the latest November 9.

The majority of the gall-wasps I have bred have emerged between March 2 and 8, but on one occasion a number emerged on February 20. The larvae suffer rather badly from the attacks of Chalcids, these emerging from April to August of the second year; I have also had the inquiline Cecidomyid *Xenodiplosis laeviusculi* Rubs. emerge in July.

N. albipes Schenck.—I have only found the galls of this, the alternate sexual generation of *N. laeviusculus* in any numbers on six occasions, a protracted search usually resulting in the finding of less than a dozen galls. If one wishes to rear the fly it is advisable to collect the galls during the first two weeks in May; after that either empty galls or those containing parasitized larvae are usually to be met with.

I have found the gall on *Q. robur* at Burgh Heath, Epsom Common, Limpsfield Chart, Coulsdon Common, West Wickham Wood, Bookham Common, Kingswood, Ranmore Common, Epsom Downs, Ashtead Common, Leatherhead, Arbrook Common, Headley, Effingham Common, Walton Heath, Banks Common and Riddlesdown; also at Epping Forest, Essex; on *Q. sessiliflora* at Kingswood, Friday Street and Worms Heath. The earliest date I have found it is May 16 and parasitized galls to August 8. The gall-wasp has emerged from May 18 to 28 and Chalcids during June, July and August.

N. aprilinus Gir.—The gall of this species appears early and matures rapidly. I have found them usually in fair numbers on *Q. robur* at Epsom Common, Limpsfield Chart, West Wickham Wood, Burgh Heath, Park Downs, Ashtead Common, Barnthorpe Wood, Effingham Common, Oxshott Heath, Arbrook Common, Beddington and Walton Heath; on *Q. sessiliflora* at Worms Heath, West Wickham Wood, Croham Hurst, and East Horsley; also at Lessness Abbey Wood, Kent.

April 2 is the earliest date I have found the gall and May 5 the latest with the insect still within it; nearly all galls found after the latter date had emergence holes in them. The gall-wasp I have

had emerge usually from April 3 to 24, but in 1934 from galls collected on April 28 *aprilinus* emerged May 11, and from another series taken on May 5, from many of which the insect had already emerged, a number came out on May 5 and 11. Again in 1935 from galls collected on April 27 *aprilinus* emerged May 5. I have only bred parasites on one occasion, two Chalcids emerging on May 26.

The galls of this species sometimes contain two cells, but I have found but few of these.

N. schlechtendali Mayr.—I have already given some details of my observations on this gall (4). On *Q. robur* I have found the galls at Epsom Common, Oxshott Heath, Wimbledon Common, Ashted Common, Boxhill, Coulsdon Common, Bookham Common, Banks Common and Effingham Common; on *Q. sessiliflora* at Croham Hurst, Banstead Wood; and at Lessness Abbey Wood, Kent.

There is no point in repeating details of the emergences of this insect, but on August 18, 1939, I had six Chalcids emerge with some *schlechtendali* from 1939 galls; these are the first parasites I have had emerge from these galls and know of no previous records.

Many authors have stated that *N. aprilinus* is the alternate generation of this species, but I have been unable to find proof that this is based upon anything but supposition. Dr. Chapman (5) collected galls of this species for Bignell and apparently found the gall plentiful on trees that had yielded *aprilinus*; I have myself found *schlechtendali* galls on trees in the near vicinity to those where *aprilinus* occurred. On May 4, 1940, I paid a visit to an isolated oak tree on which galls of *schlechtendali* had occurred freely in previous years; after a prolonged search I had failed to find a single gall of *aprilinus*.

I have sleeved and released unconfined many *schlechtendali* on young oaks in my garden with no results; this spring, 1940, one gall of *aprilinus* was found, but no *schlechtendali* were released in 1939, the last being sleeved in August, 1938. Ross (6) speaks of finding galls of *aprilinus* from which the insects had not yet emerged, and galls of *schlechtendali* on the same day. The earliest date on which I have found *schlechtendali* galls is May 13, and taking the average emergence time of *aprilinus* as occurring in mid-April, it would mean very rapid development after the eggs had been deposited. Until I have more definite proof of the linking up of these two species I shall keep an open mind regarding their relationship.

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10, Greenway,

Wallington, Surrey.

NOTES AND OBSERVATIONS.

NYMPHALIS IO IN DURHAM AND NORTHUMBERLAND.—As I have frequently indicated, this species has been regaining its position with us, and has been recorded many times of recent years in both counties. This year is no exception, for it was observed at *Buddleia* flowers in Mr. R. B. Cooke's garden at Corbridge, Northumberland, whilst I saw a batch of larvae near Urpeth, Durham, in late July. None of the larvae was removed, but no imagines were seen later. It should be noted that, contrary to certain published statements, the movement leading to the restoration of the species with us began in 1910 and 1911, when at least five people took or noted it in N. Durham. Records of its occurrence appeared then, and at intervals subsequently, in the *Newcastle Weekly Chronicle*.—J. W. HESLOP HARRISON.

UNUSUAL BEHAVIOUR OF LYSANDRA CORIDON.—With reference to the note in the *Entomologist* (p. 234) on this subject, some years ago I was attracted to a blaze of blue on the downs near Reading. When I came up to it I found that it was composed of a mass of *coridon* males clustered all over a highly decomposed dead rabbit. So I am not surprised that your correspondent found that they were attracted by cow-dung. I have not observed that other "blues" have the same habit.—E. ERNEST GREEN; Ways End, Beech Avenue, Camberley, Surrey, October 6, 1940.

LYSANDRA CORIDON ATTRACTED BY DUNG, ETC.—Mr. Neville L. Birkett (*Entom.*, 73 : 234) reports having seen a number of males of *Lysandra coridon* attracted by dung and asks if any other collectors have had similar experience with the species. My experience is that the dung of sheep has a great attraction for the males of *coridon* and to a much lesser extent for the females. I have also known this butterfly to be attracted by horse-dung, and the urine of man, horse, ass and goat.—A. A. W. BUCKSTONE; 90, Pams Way, Ewell, Surrey.

ACHERONTIA ATROPOS L. IN DUMFRIESSHIRE.—On September 6 this year a boy brought me a specimen of this moth which he had found in the grounds of Gretna Hall. It is a fine female in perfect condition, and measured $4\frac{1}{2}$ in. across the expanded wings. It is the first I have seen from this county.—JAS. MURRAY; 6, Burnside Road, Gretna, Dumfriesshire.

YELLOW ABERRATION OF CATOCALA NUPTA.—My brother has secured a *C. nupta* in which the red of the hind wings is replaced by yellow. South (*Moths of the British Isles*) mentions brown and even

blue varieties, but not this pale yellow form, which I assume must be rare.—W. A. MOORE; 22, Coach Road, Newton Abbot, Devon.

A YELLOW *ARCTIA CAJA* IN DURHAM.—In May, whilst I was inspecting the work of students in biology at the training colleges, one of the students produced for my inspection a magnificent yellow specimen of *Arctia caja* which had been bred from larvae taken at East Boldon, near Sunderland.—J. W. HESLOP HARRISON.

PLUSIA GAMMA ATTACKED BY WASP.—A few days ago I noticed a *Plusia gamma* in trouble fluttering about on the ground, and on closer examination I found it was being attacked by a wasp, which was grasping it on the underside. As far as I could see the wasp stung it three times and then proceeded to bite off the wings. Having done that it bit off the antennae and flew off with the dismembered body—just about as much as it could manage.—FRANK LABOUCHERE; Abbots Ripton Hall, Huntingdon, October 9, 1940.

FOOD-PLANT OF *CALLIMORPHA JACOBÆAE* L.—The larvae of this moth were feeding on *Tussilago farfara* on Banstead Downs a few years ago—I think in the year 1936, but unfortunately made no note of the date. There was no ragwort that I could find nearby, though of course it grows in the district.—C. I. PATON; "Ormley," 7, Cavenish Road, Sutton, Surrey.

DO BIRDS EAT BUTTERFLIES?—The following observations, abstracted from some "Jungle Notes" written by Mr. T. R. Hubback (formerly Honorary Chief Game Warden, Malaya), were made in a "hide" near a salt-lick at Jenut Lanan, Kuala Lanan, on the Telom River, Pahang, F.M.S., during July, 1939, and are reproduced by his kind permission.

Mr. Hubback had been photographing big game that visited the salt-lick, and in the long intervals of waiting for something to happen had turned his attention to a Paradise flycatcher (*Terpsiphone paradisi affinis*) which was harrying the local entomological fauna. Mr. Hubback had previously tended to throw in his lot—purely on negative evidence—with those who regard birds as predators on butterflies with scepticism. His knowledge of the Malayan jungles extends back for nearly fifty years and his support therefore was hailed with enthusiasm by the "anti's"—an enthusiasm often ready to swamp such scattered visual evidence that had been obtained.

In these notes the use of the word "fritillary" is unfortunate, as butterflies grouped under this term are not Malayan. The species in question belonged most probably either to *Cirrochroa*, *Vindula* (= *Cynthia*), or *Vagrans* (= *Issoria*), all of which are fritillary-like in flight and coloration at a distance, and are commonly found in jungle clearings. Mr. Hubback has promised to collect the fragments of eaten butterflies on any future occasion so that identification can be established. He did not do so on this occasion, however, as walking about in the salt-lick might have left a scent to disturb or deter big game coming near enough to the "hide" to be photographed:

"Kuala Lanan, July 11, 1939: There has been a male Paradise flycatcher catching flies round the salt-lick every day since we have been here, and it has been specializing, but with poor results, on large brown 'fritillary' butterflies. I have only seen it actually catch one in dozens and dozens of attempts, but one is enough to establish the fact that it does catch and eat butterflies, and the continual efforts to do so although unsuccessful confirm rather than throw doubt on the habit.

"July 14: My Paradise flycatcher has been busy this morning and I have seen him catch and eat two brown 'fritillary' butterflies and one large white butterfly (? *Catopsilia*). I have now spotted the hen; she hunts butterflies also and we have seen her catch one brown one. She has been cadging from the cock bird and helping him eat his victims. He discards the wings, which flutter to the ground. All this will give ——— a lot to think about, as such positive first-hand evidence is hard to come by.

"July 19: The Paradise flycatcher has been very busy the last few days and we have seen him catch and eat numbers of butterflies. The hen has not been in evidence for three or four days and must be sitting, I think. I see the cock bird dash off after catching a butterfly always in the same direction and I imagine he must be going to the nest.—T. R. H."—H. M. PENDLEBURY (Director of Museums, F.M.S.); Selangor Museum, Kuala Lumpur, Malaya.

AN INLAND RECORD OF *Aedes* (*Ochlerotatus*) *Caspius* PALL.—On September 5 last, in the garden here, I was attacked by a very persistent female mosquito, which on capture and examination proved to be *A. caspius*. Subsequently I have found it to be frequent in the neighbouring woods, on an acid peat with a pH varying from 3.0 to 5.0. Marshall says it is almost exclusively a salt marsh species, but quotes some inland records, including Mitcham and Wimbledon in Surrey (at both of which places it was found to be breeding). Perhaps the dry season has something to do with its appearance here, as it was certainly not present last year.—H. L. G. STROYAN; Auchengray, West Byfleet, Surrey, September 21, 1940.

SOME EAST NORFOLK DRAGONFLIES.—The Broadland trio, Rollesby, Ormesby and Filby, do not appear to attract their fair share of attention from visiting entomologists—a fact doubtless accounted for by their comparative isolation from the better-known parts of the district. The three Broads are connected with each other, and together form an extensive area of water (464 acres, as against the 578 of Hickling and Whiteslea), while to the south of Filby a winding, shallow channel connects them to the River Bure, some 1½ miles below Acle Bridge. Navigation from the Bure up the channel (known locally as Muck Fleet) is, however, effectually barred by a sluice at the junction.

Not much appears to have been recorded of the dragonfly life of the area. Prof. F. Balfour-Browne studied the Odonata of the

Broads district in 1903, with particular reference to the Zygoptera, and his conclusions are published in the *Transactions of the Norfolk and Norwich Naturalists' Society*, 7, pt. 5. The only dragonflies he records from the locality are *Ischnura elegans* and *Enallagma cyathigerum*, while H. G. Attlee, visiting the Filby neighbourhood in 1938, is able to mention only the former species, together with *Coenagrion pulchellum* and *Erythromma naidas* (*Entom.*, 72:188). My first acquaintance with the area dates back to June 26, 1938, when I observed the following at the Bure end of Muck Fleet: *Aeshna isosceles*, a single specimen; *Orthetrum cancellatum*, one male; *Libellula quadrimaculata*; *Erythromma naidas*, several males; *Coenagrion peulla*, commonly; *C. pulchellum*, several in cop.; and *I. elegans*. I was particularly delighted with the *isosceles* discovery, as the sea-floods earlier in the year had devastated its headquarters and there was every reason to fear the worst (see C. O. Hammond, *Entom.*, 71:174). In passing I may mention that I met the same species sparingly in the Ant Valley the previous day, but this extension of its range to the lower Bure Valley was especially gratifying.

On June 8 this year the locality was again visited. We had hardly left the staith when we spotted an *Ae. isosceles* patrolling his beat in a small bay near the bridge which separates Ormesby and Filby Broads, and while we were watching this specimen at close quarters two more came sailing over. A small channel near the south end of Filby proved a paradise for *isosceles*, probably not less than 20 examples being seen here and in a portion of Muck Fleet close by. Five pairs were noted in tandem, one of the pairs flying slowly in mid-stream with the lower half of the female's abdomen depressed vertically, suggesting that perhaps she were dropping eggs at random in the water. *Brachytron pratense* Müller was common, several being observed ovipositing low down in the thick dyke-side herbage, always in the shady side. The rustling of their wings among the sedge betrayed them. They seemed to like floating debris to deposit their eggs on; one piece of dead sedge which I observed bore three ova neatly arranged in a line. Many male *O. cancellatum* were seen, together with one pair in cop. Other dragonflies included a few *I. elegans*, one pair of *Pyrrosoma nymphula* copulating in Muck Fleet and one species of *Coenagrion*. The dominant dragonfly everywhere on this occasion was *E. naidas*. The males abounded in little bays at the edges of Ormesby and Filby, while down Muck Fleet pairs were ovipositing in scores. The aquatic vegetation which we examined bore eggs in abundance. In the case of one pair which we watched the female was completely submerged and supported by the male, which, however, became alarmed by our drifting boat and deserted his mate. The latter thereupon retreated gravely backwards down a Potamogeton stem, getting ever deeper and deeper under water, and when we left the spot she was already some two feet below the surface. On the way home we rescued two male *naidas* from drowning, and my wife placed them on her hand to dry. When they had recovered sufficiently we were fascinated by the quaint manner in which they teased their sodden and crumpled wings

apart by sharp up and down strokes of the abdomen. It was interesting, too, to watch how they insisted on resting head to wind; several times we purposely altered the boat's course so as to bring the wind on their beam, but each time they very deliberately turned round into the breeze. There seemed to be an epidemic of drowning dragonflies that day, for in addition we rescued an *I. elegans* and a pair of *B. pratense* attached *per collum*. It seems strange that such powerful flyers as the last two should have come to grief in this fashion.

On July 2 I again visited the locality, and despite the short interval which had elapsed the change in the dragonfly fauna was most marked. *Ae. isosceles* was distinctly on the wane, only four specimens being seen, and *Ae. grandis* was beginning to put in an appearance. (Incidentally this latter species had an early hatch this year; it occurred doubtfully in my garden on June 9, and positively in Norwich on the 18th of that month.) Down Muck Fleet *grandis* and *isosceles* were seen sparring together. *O. cancellatum* was the commonest dragonfly seen, the males thrusting themselves upon one's notice every few yards along the channel. Here and elsewhere in Norfolk I have noticed that they are especially partial to resting on patches of recently-cut reeds, which show up very light against the surrounding vegetation. On one such patch six males were resting quite close together. This fondness for perching on light-coloured objects was demonstrated that afternoon as I lay in the boat after lunch, when two male *cancellatum* chose to alight on my arm. We saw two pairs flying in tandem, and later a female ovipositing at the edge of a dyke. Of the swarms of *E. naias* seen less than a month previously, only two males could be found. *I. elegans* was noted sparingly—mostly teneral examples—while one was seen ovipositing. A few *puella* in *cop.* were noted, and one pair of *pulchellum* flying tandem-wise.

Enough has been said to show the interesting possibilities of the area from an Odonatist's point of view. It is unlikely that any entomologist will visit Filby during the war, but when happier times come and any collector chances to find himself in the neighbourhood, it is perhaps superfluous to add that *isosceles* stands in need of the most rigorous protection if it is to recover from the disaster of February, 1938.—E. T. DANIELS; 334, Dereham Road, Norwich.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—June 13, 1940.—Dr. E. A. Cockayne, A.M., F.R.C.P., F.R.E.S., President, in the Chair.—Mr. H. W. Andrews exhibited a series of a very rare Trypetid fly (Dip.) of which he had taken some number in the Thames marshes; Mr. S. Ashby, series of *Gymnetron beccabungae* from Bookham, and *G. veronica* var. *nigrum* from Bude (Col.); Mr. H. Moore reported the great abundance of *Vespa vulgaris* in Essex, May 30 and 31. Mr. Hy. J. Turner exhibited a box of

Lepidoptera from Central Ecuador, containing tailless *Papilio* species, mimetic *Dismorphia*, large species of *Catopsilia* and *Taygetes*, *Heliconius* and *Callicore* and numerous clearwing Danaine species, etc. ; Mr. Eagles, the Longicorn, *Anaglyptus mysticus*, from Epping Forest ; Dr. G. V. Bull, a yellow shaded *Harmodia lepida* Esp. (*carpophaga* Bork.) from Kent and the white shaded form from Dungeness, also a gall on ground ivy ; Mr. F. D. Buck, Coleoptera from under elm bark, and other species from Epping Forest, June 1, 1940 ; Mr. S. P. Doudney, specimens of *Nyssia zonaria* bred from ova of Conway females ; Mr. Britten, a box of parasitic Hymenoptera.

June 27, 1940.—The President in the Chair.—Dr. K. G. Blair exhibited varieties of *Rhagium bifasciatum* and noted that the range of variation is in the increase or diminution of the areas of the yellow marking ; Mr. F. D. Coote, living examples of *Limenitis camilla*, *Argynnis adippe* and *Polygonia c-album* from Ashted, also ova of *Procris statice* and of *Abraxas sylvata*. On behalf of Mr. Hy. J. Turner, Mr. Coote showed a box of Syntomid moths and read notes on the distribution and habits of the family. Mr. Eagles exhibited larvae of the sawfly of the Solomon's Seal, *Phymatocera aterrima*, and ova and newly hatched larva of *Mimas tiliae* ; Mr. Britten, a number of Chalcids, including one from the corky bark of elm parasitic on the larvae of the beetle *Magdalis armigera*, Fourc., also some parasitic on the pine bark beetle and others from a gall on the large thistle. He also showed a gall on the guelder rose, *Viburnum opulus*, which was probably caused by a fungus. Mr. C. N. Hawkins contributed notes on Lepidopterous pupae.

July 11, 1940.—The President in the Chair.—The President exhibited varied larvae of *Pachetra leucophaea* from Rye, Kent, and of *Perizoma blandiata*, *Zygacna achilleae*, and *Epirrhoe rivata* ; Mr. J. A. Stephens, Coleoptera taken in Cobham Park, including *Caenopsis fissirostris*, rare, *Gronops lunatus* among oak leaves, rare, *Thanasimus formicarius*, and *Leptura scutellata* from hornbeam, rare ; Mr. F. D. Buck, *Xestobium rufo-villosum* and *Corynetes coeruleus*, the larvae of which feed apparently on those of the former ; Mr. L. G. Payne, *Cetonia aurata*, *Meloë proscarbaeus*, etc. ; Dr. K. G. Blair, the Tineid *Argyresthia goedartella*, and gave notes on its life-history and habits, also the Forest Fly, *Hippoboscus equina* ; Mr. F. D. Coote, on behalf of Mr. Hy. J. Turner, a further box of *Syntomidae*, including the reputed British species, *Dysauxis ancilla*, L. There was a special Exhibition of " Household Insects," by Messrs. T. R. Eagles, Mr. S. Wakely, Mr. S. R. Ashby, and others, including Coleoptera, Lepidoptera, Orthoptera and the Thysanurid *Lepisma saccharina*.

July 25, 1940.—The President in the Chair.—The death of Miss M. E. Fountaine was announced. Mr. August exhibited examples of *Apatura iris* from Britain and France ; Mr. Hutchings, a full fed larva of *Sphinx ligustri* from Ewell, Surrey ; Mr. F. D. Coote, *Mimas (Dilina) tiliae*, captured by a schoolboy in Cheam, brown, with only the slightest trace of the usual green colour, referable to ab. *brunnea* figured in Seitz ; also on behalf of Mr. Hy. J. Turner a varied series of *Anchocelis helvola (rufina)* ; Mr. J. O. T. Howard, an asymmetrically

marked aberration of *M. tiliae* and a short series of *Dianthoecia irregularis* bred last August from larvae collected near Mildenhall; Mr. Hawkins, melanic forms of *Ennomos quercinaria* and read notes on the breeding of these and similar forms during some years past; Mr. S. Wakely, on behalf of Dr. G. T. Robertson, aberrations of *Xanthorhoe fluctuata*, central band complete, a dark banded form of *Euphyia bilineata* and *Alucita pentadactyla*, with a black dot on the lower cleft, and the local Tortrix *Endothenia antiquana* Hb. Reports of recent Field Meetings were read by the respective leaders.

August 8, 1940.—The President in the Chair.—Dr. E. A. Cockayne exhibited a larva of *Smerinthus* *hyb. hybridus*; Mr. S. Wakely *Spilosoma lutea* ab. *fasciata* from Clapton; Mr. T. R. Eagles, bred examples of the Tortrix *Evetria buoliana* and ova of the Neuropteroid fly *Chrysopa flavus*; Mr. F. D. Coote, a living *Nematois fasciella* from Ashted, Surrey, August 7, 1940, and, on behalf of Mr. Hy. J. Turner, species of the Catagrammidi Group of S. American Nymphalids, *Perisama oppelii* and *P. bonplandii*; Dr. Blair, a selection of galled twigs of sawfly, together with some of the insects and their parasites reared from them. Reports of several Field Meetings were presented and read.—HY. J. TURNER (*Hon. Editor of Proceedings*).

OBITUARY.

ERNEST EDWARD COOPER JOY.

It is with great regret that the many friends of Ernest Joy will learn of his sudden death on August 30 last at a nursing home at Lyndhurst, Hants. He had been at the nursing home about a month, and whilst it was not altogether unexpected, his sudden end came as a shock.

Joy, the eldest son of Edward Joy, was born at Gloucester on June 15, 1869, and was thus seventy-one when he died. He was a member of the Baltic Exchange for the whole of his business career. He retired in 1922 and went to live at Folkestone.

Joy was an indefatigable collector and would not have any insect in his collection he had not taken himself. For some years he collected the whole of the British Macrolepidoptera, but he gave up the moths some years ago and confined himself to the butterflies. He had an unrivalled knowledge of our British butterflies, had taken all of them himself, and almost without exception had bred them from the egg.

His collection has been left to the Folkestone Museum; it is most elaborately arranged, and the data labels unusually well displayed. It includes one cabinet of European species, given to him by friends, which contains many very interesting and local species.

The many entomologists who visited Folkestone did not fail to call on him. He was a man of infinite charm of manner, kind and courteous, and always ready to help everyone. He will be missed by many and not least by his old friends who have known him for many years. We will not look on his like again. His wife died on December 30 last after a happy married life of forty-four years. W. R.-S.

THE ENTOMOLOGIST.

VOL. LXXIII.]

DECEMBER, 1940.

[No. 931]

SOME BREEDING EXPERIMENTS WITH *ABRAXAS* *GROSSULARIATA* (*Lep. Geometridae*).

BY G. H. T. STOVIN.

I HAVE always been attracted by this insect, largely on account of its many varietal forms and therefore of the scope offered for research along Mendelian lines. Raynor himself was first led to breed *grossulariata* extensively for the very same reason, and undoubtedly must have acquired much knowledge as to its genetics. Unfortunately he published little or nothing that was of any value in this direction, with the result that much potentially valuable information died with him. Only his collection of set insects survived, to be broken up and sold later.

Five years ago I started collecting wild larvae in the hope of securing the necessary varietal forms with which to start breeding operations. To those many entomologists who have helped me during this period by sending me larvae from their particular districts I would like now to offer my very grateful thanks.

At the moment my operations have had summarily to be suspended owing to the almost complete evacuation of my home district. Before I left, however, I planted out my complete stock of ova in the hope that, upon my return home, I may be able to reassemble most of the varietal forms that I have recently been breeding. Since also my furniture has had to be stored I am unable to give data of my breeding operations to date, for the note-books concerned are also in storage. With the uncertainties of the present condition, however, I felt that it might be of interest to put on record a brief summary of my results up to the present.

I have bred two wild *lacticolor* females—one from Aberdeen, the other from Huddersfield. Both these acted in the expected manner and showed the *lacticolor* form to be a sex-linked recessive.

Varleyata I secured from Mr. L. W. Newman. Previous records have shown that it behaved as a normal Mendelian recessive. There are, however, various modifying factors at work to produce such forms as *actinota*. There is scope for more work in this direction, but, from the little I have done, there is some evidence suggestive of a sex-linkage factor in connection with certain of these modifying factors. My data, however, are so scanty that I am able to do no more than to note the fact of my supposition.

Perhaps the most interesting facts that have come to light refer to the forms known as var. *hazeleighensis* and var. *nigrosparsata*. In the *Journal of Genetics* (1921, 11 : 127, pl. 19, figs. 11 and 12) Onslow depicts *aberdoniensis*, which he describes in error as *hazeleighensis*. He comes to the conclusion that *hazeleighensis* is recessive to the ordinary type, but, as he was obviously working with *aberdoniensis*, this word should be substituted for *hazeleighensis* in his notes.

So far as true *hazeleighensis* is concerned, some care must be exercised. I have on three occasions bred *hazeleighensis* from wild caught larvae ; of these, two have proved to be ordinary Mendelian recessives. The third refused to pair, so that I was unable to obtain any progeny.

There is another form, however, which, on superficial examination, could easily be mistaken for *hazeleighensis*. Last year I described a form in the *Entomologist* to which I gave the name var. *inframaculata*. This form proved to be a Mendelian dominant to the type insect, and has on several occasions produced an insect the upper wings of which resembled those of *hazeleighensis* owing to the lateral extension of the black pigment in the transverse band. Always, however, the hind wings have exhibited the large blotches and markings to which I called attention in my original description. This form will, under the breeding test, act as a Mendelian dominant, though a large number of the resulting progeny will be ordinary *inframaculata*. In other words the presence of some modifying factor such as Onslow's L and I must be present to govern the limitation or extension of the black pigment in this dominant form. The true nature of this insect, even when in appearance like *hazeleighensis*, can be inferred from the heavily blotched hind wings.

Var. *nigrosparsata* has in the past been somewhat of an enigma, for it appeared to respond to no known Mendelian ratio in its breeding habits. I am indebted to Dr. E. A. Cockayne for the explanation I am now offering as a possible solution, although my experiments up to date have not been sufficiently numerous to be absolutely conclusive.

My first *nigrosparsata* came from a batch of wild Cornish larvae, though since then I have obtained it on several occasions from wild larvae from different parts of the country. In support of the hypothesis put forward by Dr. Cockayne I would point out that I have bred this insect, both wild and in captivity, in varying degrees of blackness from the heavily spotted forms to those in which it was impossible to detect the fine speckling without the aid of a magnifying glass.

If *nigrosparsata* is paired to a type insect a percentage of the

F₁ generation will be *nigrosparsata*. This percentage appears to vary somewhat, but is usually somewhere in the region of 15 per cent. At first I came to the conclusion that I was probably dealing with a heterozygous dominant, and that my numbers were insufficient to give me the required 50 per cent. ratio or that possibly some lethal factor might be involved. Further breeding however always gave me approximately the same result. It was obvious that here was a factor that was acting in some way as a dominant but in a manner in some way incomplete, and one which did not conform to the normal ratio expected from dominant Mendelian factors.

On referring the question to Dr. Cockayne he put forward the suggestion that in *nigrosparsata* I was dealing with a case of imperfect dominance; in other words, with a dominant factor with imperfect penetration. If future work proves this to be the correct explanation, and, as I hope to show presently, everything up to the present suggests that it probably will, then we have a solution to the difficulty which has hitherto beset those breeding *nigrosparsata*.

When var. *nigrosparsata* is paired to *nigrosparsata* the resulting progeny should show in appearance three *nigrosparsata* to one type insect, supposing both *nigrosparsata* to be heterozygous dominants. Actually I have only had the opportunity of once making this pairing and only a small brood resulted this year. The results were not up to this ratio, but showed a higher percentage of *nigrosparsata* than the previous 15 per cent. obtained with *nigrosparsata* by type. This was suggestive but of course nothing more.

If the theory of poor penetration be correct then there should be a number of insects, type in appearance, but *nigrosparsata* in genetic composition. I have had many, so lightly marked as to be type unless examined by a magnifying glass, which have bred like *nigrosparsata*. From pairings of F₁ type insects, however, I have so far bred nothing but type insects, though I suspect that when I am again able to breed these in sufficient numbers a percentage of var. *nigrosparsata* will appear. This would materially help to prove the poor penetration theory.

For long I have suspected that the connection between var. *nigrosparsata* and var. *nigra* was purely one of degree. This year my suspicion was supported very definitely, for in the F₁ generation from var. *nigrosparsata* paired to var. *varleyata* I bred, in addition to type insects and *nigrosparsata*, one very nice ♂ *nigra*. Unfortunately this ♂ refused to pair with any ♀ in my possession.

With var. *subviolacea* I have had some slight experience, enough to suggest that this form acts as an ordinary recessive to

the type and is not sex-linked in any way. There are other factors at work, however, about which so far I can express no opinion. The depth of colouring varies and is probably multifactorial in origin. There is variation also in the disposition of the rust-coloured pigment in the wings, for I have bred insects in which this colouring is not diffused equally throughout the wings themselves but appears as blotches.

This, then, is the extent of my observations up to the present. In normal times I should have regarded the above data as being too inconclusive to warrant publication. Under the present conditions, however, and as my experimental breeding has been brought to an abrupt termination, I feel justified in putting on record my conclusions, for what they are worth, in the hope that they may be of use in the future. Should I be able again to recommence my breeding experiments after the war I shall hope at some later date to amplify these records and publish actual data. When the time comes that I can once more re-start I shall welcome the collaboration of anyone who will send me wild larvae from his own particular district.

Mount Pleasant,
Pirton Road,
Hitchin, Herts.

LYSANDRA HYB. POLONUS.—On the South Downs on June 12, I captured an insect which appears to be the supposed hybrid between *L. bellargus* and *L. coridon* known as *polonus*. The features which suggest *bellargus* parenthood are primarily the vivid colour, which is considerably brighter than in the *coridon* form usually known as *ultra-caeruleo*, and the fact of its being already a bit worn when captured in June. Practically everything else suggests *coridon*, namely size (only just below normal *coridon*), black borders (though half the average *coridon* width), prominent black spots on hind wing surrounded by white crescents, general appearance of underside. It would be interesting to know of other specimens that tally with this description.—(Rev.) J. N. MARCON; Christchurch Vicarage, Eastbourne.

[Several have been reported in these pages of recent years. See *Entom.*, 56 : 185, 283 ; 57 : 48 ; 60 : 124, 127 ; 68 : 195, etc.—Ed.]

NEW RECORDS FOR IRISH LEPIDOPTERA.—Dr. Arthur A. Lisney's interesting paper on the above subject (*Entom.*, 73 : 123) reminds me that when living at Blackrock in the year 1901 three *Herse convolvuli* were observed in the garden flying to *N. affinis* in early September, and two examples of *Cirrhodia xerampelina* were found on street lamps on the 9th of the same month ; this latter species has not, I think, been recorded from Co. Dublin.—THOMAS GREER; Sandholes, Dungannon, October 25, 1940.

ON THE ALLEGED RARITY OF CERTAIN *PAPILIO* FEMALES IN MALAYA.

BY DR. L. RICHMOND WHEELER, F.L.S.

I. *Papilio brookiana albescens* Rothsch.

Though males are common in the central part of Malaya, the females have always been regarded as rare, as Distant reported in 1882-85 (*Rhopalocera Malayana*, 331); the figures he quotes give about one female to 100 males. As late as 1934 Corbet and Pendlebury suggested a ratio of 1 female to 1000 males (*Butterflies of the Malayan Peninsula*, 77-8). My first search for this species in 1934 supported these views; it was confined to certain areas near Tapah, including the Batang Padang Valley below 500 ft., where I saw many males, including about a hundred together at certain hot springs. Though I saw a female not far from there I did not then recognize it, as I then expected females to be very rare.

But during the period September 15-20, 1935, my wife and I saw *brookiana* females frequently while observing butterflies along the Cameron Highlands Road in this valley from 300 to 2000 ft. elevation in dense jungle country. There were about 30 males at the hot springs on the 15th and about 20 on the 20th, when my wife saw a female flying near. At Jor Camp site, about 1800 ft., on the 17th I saw females frequently and only four or five males; on the 19th my wife and I saw both sexes quite frequently though no female came near enough to be caught. One female had a damaged fore wing and was easily distinguishable from the others. In the afternoon we moved down to the 17th-18th mile, where again there is a bridge across a stream running down a jungle valley; at 4 p.m. a female, which I missed, flew downstream over the bridge quite close to us; another followed almost immediately, and I caught it easily.* On the 20th we saw females at Jor, one feeding on a highish flowering tree with *Hestias*, besides the individual seen 12 miles lower down by my wife. So we saw at least four or five females, probably more, to about 80 males during these few days.

My next long visit to this neighbourhood was in September, 1937. On the 5th I saw many males at the hot springs, as usual; all caught were unblemished, like the others seen, and no females were visible here this time. But near Jor I saw three females feeding together on the big flowers of an *Ixora* tree between

* On a later occasion a car dashed over this bridge just as a female flew over, and spoiled my chance.

4 and 5 p.m., with three or four males and one male *P. memnon*. I captured one female and another the next day at the same place and time; both were oldish, but each was followed about by a male. There is no superfluity of males here or anywhere else a thousand feet or more above sea level as there is at the hot springs or along the roads near the foot of the jungle-covered mountains.

Mr. H. Gordon Graham, J.P., has lived long in Malaya and often taken female *brookiana*; he states that females are commoner than males at Renglet, 3500 ft., where he now lives.

We went together thence down the Cameron Highlands Road on September 11 to about the 10th mile and back. *Brookiana* females were constantly in view, including at least two together at Jor and two distinguishable by worn or torn wings; they were seen mostly between 3 and 5 p.m. at 1000–2000 ft. elevation. On this day females, about ten in number, were more numerous than males. But next day, on my homeward journey, I saw only a few males at Jor between 10.30 and 11.30 a.m., plenty more at the hot springs and along the foothill road, and only one female, at the 14th mile Waterfall. So a casual morning observer this day would have been confirmed in the common error of the much greater commonness of the males.

Between January 30 and February 1, 1938, I was able to confirm my observations on the sex-ratio of *P. brookiana* in these haunts. Only males were seen in large numbers on the first morning in the lower areas, including nearly a hundred at the hot springs. But in the afternoons, in suitable places between 1000 and 2000 ft., sufficient females were seen to give a ratio of 1:20 or 25, even including the abundant males seen below. But the females were, as usual, flying and feeding high and I had no opportunity of capture.

The reactions of my companion on this occasion were very interesting, as he was one of the best collectors in Malaya who, however, had not previously had much opportunity of studying this particular species. He naturally saw the abundant males on the first morning, but was elsewhere when I saw a female feeding near the 14th mile Waterfall. We spent most of the second day in the higher regions, where *P. brookiana* seldom appears; and at Jor only a few males were seen before 4.30 p.m. when my friend was inclined to "call it a day," as collectors do when butterflies have mostly disappeared. But by visiting a suitable flowering tree (*Bauhinia*) within the jungle we found two good females feeding heartily from 5–6 p.m., with other *Papilio* females. Next day I saw several *brookiana* females, including at least one new, worn specimen. One, flying high, was taken by my companion for a

bird at first, but he recognized it later as its white markings stood out against a dark background of trees. Had he been alone this expert lepidopterist would have reported a hundred males and no females for this period. As I knew the local conditions he saw several females and caught one easily soon afterwards.

The only other place at which I can recollect seeing a *brookiana* female is the Gap Rest House garden, 2800 ft. up, near Fraser's Hill; isolated males appear in the neighbourhood sometimes.

A few general notes about the female *brookiana* may be given here. It flies usually rather more slowly than the male, and much more slowly than many other Papilios, though, like other slow butterflies, it can accelerate somewhat when alarmed. Its flight is very direct and is normally 20 to 40 ft. above the ground or stream, and sometimes much higher, 100 ft. and more. Unless clearly seen, it may easily be taken by the inexperienced for some other large *Papilio* or even Nymphalid, or even, if high, for a bird. Yet it is, I think, the most conspicuous jungle butterfly. Its calm, unhurried motion suggests that, like the male, it is fearless of attack by birds while on the wing; and this apparent immunity is supported by our observations, for birds abound in typical *brookiana* haunts. Certainly many females grow old enough to show much wear and tear; and occasionally possible beak rents or marks have been noticed on old specimens. If these are what they appear to be, they may well have been caused when the insect is at rest or feeding, when it could be attacked by many predators which could or would not attack it in flight.

The large white markings, particularly those near the fore-wing tips, are very conspicuous, especially during flight, which of course magnifies the effect of light colours at the most rapidly moving parts of the wings. In certain conditions these moving white wing tips show up almost like white lights in the jungle shade. They *may* function as sexual recognition marks to guide the males in the dark jungle glades where these magnificent insects normally live.

When resting they close their wings, sometimes at least; unlike many other large Papilios of both sexes, they never seem to rest with wings open in a convenient place for netting them. Though such a heavy butterfly, the *brookiana* female almost hovers while sucking flowers, which it does greedily, like other big Papilios, especially the females. Sometimes it hangs like this in the air, as though dancing, the wings fluttering rapidly and flashing white at the front tips. This appears to be a love dance, like that of the beautiful black and golden *P. amphrysus*. The male *brookiana*, only one, also often hovers in the air near the female while it feeds, though the latter remains absorbed in its

meal unless the male gets too insistent, when the lady skims away, usually to find another, more peaceful, feasting place.

In two important respects the habits of the female differ from those of at least some of the males. These concern place and time of day. As regards place, *brookiana* females live normally in the jungle about 1200–2000 ft. up, as at Jor, near where they almost certainly breed, probably high up in the trees or climbing plants. They occur down to a thousand feet or so but seldom much below that, and are also found up to about 3500 ft. or even more. Some males, however, either surplus ones or those that have functioned as husbands, flock downwards to hot springs or open roads, where they are very obvious to any naturalist, as they were to the first observers in days when there were no roads into the higher jungle. Also, the males are very easily noticed because they fly or drink and sun themselves in the morning hours, which are often fine in Malaya. The females, on the other hand, are most easily observed and collected from 3 p.m. or later till dusk gathers quickly about 6 p.m.; and this is a time when it is very often cloudy or raining hard in the mountains where this species lives. So the ordinary collector, who sallies forth in the bright morning and, naturally, retires when an afternoon downpour threatens, sees hardly any females; and his idea of their relative scarcity will be intensified if he stays near lowland road or river, where so many butterfly species occur, and fails to find or penetrate the few available jungle tracks, sometimes suggestive of snakes, tigers and other wild beasts. Such experiences get narrated and multiplied so that other naturalists set out with the assumption that they will but rarely behold *brookiana* females; consequently they may fail to identify them even if they do see them at unusual times or places. And, anyhow, it is harder to capture than the male because it usually keeps much higher in the air when flying and feeding, even in the jungle (*cf.* Distant, *loc. cit.*), and never settles on hot wet sand. My captures at the *Ixora* tree were only possible because there happened to be some old stonework underneath on which I scrambled after fording a stream; even then I could only just reach the butterflies with a long net pole when they visited the lowest flowers; other captures or chances of capture usually occurred only where bridges gave the collector a chance of being 20 ft. or so above the streams along which *brookiana* likes to fly.

To sum up; my own observations after 1934 and those of my wife and Messrs. Gordon Graham and E. M. Hayward give a ratio of 1 female to about 20 males, even allowing for the large and abnormal gatherings of males in the lowland regions. But at Renglet females appear more often than males and in the central

brookiana country the sexes are seen about equally; so I think this may be taken as correct for the species in its observed haunts. Anyhow, the sex ratio is very much more equal than the estimates quoted in my opening paragraph. Breeding experiments are impossible while nothing is known about the early stages or the larval food plant.

II. *Papilio brookiana trogon* Voll.

Till about two years ago this Sumatran form was unknown in Malaya, and I have never seen it in nature. It was discovered in swampy jungle near Kota Tinggi, Johore, far from the *albescens* country, by Messrs. Cowan and Eliot, Royal Artillery officers stationed in Singapore, and seen later by Mr. Hayward. The fact that up to March, 1938, the females seen outnumbered the males by about four to one is in marked contrast to the condition prevailing in ssp. *albescens*. No male gatherings like those of *albescens* have yet been observed.

III. *Certain other Species of the Aristolochia Group of Papilio.*

During 1937 I was able to make observations on the sex ratio of several large species in this group in which the females are more conspicuous than the males.

P. varuna is described by Corbet and Pendlebury (*op. cit.*, 80) as much rarer than *P. nox erebus* and usually taken at higher elevations. My experience in north Malaya and Penang has been otherwise; but for three years, though I saw a number of males and captured four, I observed only one female, which I could not reach. But about June, 1937, a new area was opened at the Botanic Gardens, Penang, which are very little above sea level. It was planted with *Lantana*, including a white variety, and various other plants with flowers that attract local butterflies. Here I found *varuna* quite common. Males appeared frequently during the morning and females hardly ever, and this condition lasted till about 5.30 p.m. Then the males got fewer and females appeared regularly and fairly plentifully, so that I soon got as many as I wanted; and I often visited this area about 6 p.m. just for the pleasure of seeing the fine females flying about and feeding on the *Lantana* till darkness fell about 6.30 or 7. The Gardens are surrounded by jungle and the *varuna* and other butterflies always flew back into this.

This experience was repeated at the foot of Kedah Peak, in the Waterfall Quarry, where masses of wild *Lantana* grow. About 5.30 p.m. I captured three or four females and saw others, but hardly any males; next morning, about 10-12, there were plenty of males but no females.

This occurrence of *varuna* males in the daytime and of females in the evening continued for several months, from July to October. During the wet, sunless months of November and December I hardly saw any of either sex. At the end of December they began to appear again, as before.

Often flying with them were *Papilio amphrysus*, *P. coön* and *P. aristolochiae*. In these species, too, the males were noticeably commoner during the usual hours for butterfly collecting, during strong sunlight, and the females were rare; after 5 p.m. the males became less common and females appeared abundantly. This was easily observable at the Penang Gardens and the Kedah Waterfall quarry, and, though to a less striking extent, in other places. Again, the result is that the females of these butterflies appear to the observer, during the usual collecting hours, to be much less common than they actually are.

It is certain that the males have no duties beyond love-making, whereas the females are probably occupied in egg-laying in the jungle during much of the day. Many tropical *Papilios* lay eggs singly and take considerable time in searching for a suitable separate leaf or bud for each. Only when they have satisfied this dominating instinct, it would seem, do they come out in the late afternoons to feed and enjoy themselves, at least in these species and *brookiana albescens*. In all the species mentioned, unlike many other *Papilios*, the difference between the sexes is easily observable without capturing the insects.

As an example on the other side my experiences with *P. memnon agenor* may be mentioned. For over two years the three female forms, as well as the common male form, were regularly seen and occasionally captured by myself and various helpers in Perak, Province Wellesley and neighbouring places. But in 1937, though I saw males in abundance in the northern half of Malaya, I only once saw, and captured, a female. Had this been my only year of butterfly study I should have concluded that though the male was common the females were very rare, and that the sex-ratio was anything from 1:50 or 100. So much do the appearances of butterflies vary from time to time in this country of dense and evergreen shade.

EARLY APPEARANCE OF VANESSA IO.—On July 8 last at Epsom, Surrey, I noticed a freshly emerged individual of *Vanessa io*, this being my earliest date for the species with the exception of that of July 5, 1887, when five were seen. Three hibernated specimens were seen as late as June 3.—A. A. W. BUCKSTONE; 90, Pams Way, Ewell, Surrey.

THE IDENTITY OF THE FABRICIAN SPECIES *PAPILIO SPHINX* AND *PAPILIO HYLAX*.

BY A. STEVEN CORBET,
British Museum (Natural History).

WHEN visiting the Copenhagen Museum in 1933, I was surprised to find a specimen of *Tajuria cippus* (Fab.) labelled "*sphinx*" in what was believed by the Museum authorities to be the handwriting of Fabricius. A specimen of *Zizula gaiika* (Trim.) was similarly labelled "*hylax*." Although it was evident that too much importance need not be attached to such labels, a cursory glance at the original descriptions of the species in question showed that the matter was in need of investigation.

Papilio sphinx Fab.

Papilio sphinx Fabricius, 1775, *Syst. Ent.* : 520; Hab. in India orientali-Koenig.

The first part of the description differs in no essential from that which Fabricius subsequently gave for *Hesperia cippus*, and is then followed by the habitat. After this a more detailed description follows, which can hardly be reconciled with *cippus* on account of the words "strigis duabus undatis, fuscis, . . ." and the reference to a fine and elongated anterior tail and a shorter and blunter posterior one. In 1781, *Spec. Ins.* : 116, Fabricius gave only the first part of the description of *sphinx* and placed the Surinam species *Papilio dindymus* Cram., 1775, as a synonym although he retained the original habitat. Cramer's species (*Thecla dindymus* in Seitz, 5) conforms with Fabricius' original description except for the habitat. Koenig collected in South India, but so far as is known, none of his specimens reached the Copenhagen Museum.

Godart (1819, *Enc. meth.*, 9 : 632) identified *sphinx* with Cramer's species, stating that the habitat was Surinam and Brazil and not "Indes orientales" as given by Fabricius. Hübner ([1826], *Zutrage*, 4, figs. 635, 636, ♀) figured the same species as *Bythis sphinx*, and, in the text, Geyer (1832 : 13) cited *Papilio dindymus* Cram. as a synonym.

de Nicéville (1890, *Butt. India, Burma and Ceylon*, 3 : 458) appears to be the first author to employ the Fabrician name for the *Rapala* species which now passes under the name, although not found in South India, and it is clear that he was wrong in so doing.

A possible explanation of the muddle is that Fabricius first described *Tajuria cippus* (Fab.) as *sphinx* from a South Indian specimen taken by Koenig, but later modified his description

after examination of a different species. In view of the uncertainty attaching to the name, it appears undesirable to use it for any species, for it has priority over *cippus* and may have over *dindymus*. The oldest name for the collective species known as *Rapala sphinx* Auctt. is *elcia* (*Deudorix elcia* Hewitson, 1863, *Ill. diurn. Lep. Lyc.* : 23, pl. x, figs. 38, 39, ♂; Philippine Islands). The Javanese form is now without a valid name, and for this is proposed *R. elcia vajana* nom. nov. pro *Deudorix sphinx* Piepers and Snellen, 1918, *Rhop. Java*, 4 : 85, pl. xxv, fig. 129, a ♂, b ♀. I regret that I overlooked this matter when revising the genus *Rapala* Mre.

Papilio hylax Fab.

Papilio hylax Fabricius, 1775, *Syst. Ent.* : 526; Hab. in India orientali. Koenig.

In the original description of *hylax* it was stated that the upper-side was fuscous and that the species was the smallest in the genus; in 1781, *Spec. Ins.*, 2 : 124, Fabricius altered the habitat to "Malabar. D. Koenig." In 1793 (*Ent. Syst.*, 3, 1 : 304) Fabricius wrote "Minima in hoc familia" in his description of *Hesperia hylax* after describing *Hesperia otis* on p. 296.

Donovan's illustration of *P. hylax* in 1800 (*Ins. India*, pl. xlv, fig. 2) is rather grotesque, but was probably intended to represent a *Zizeeria* species, and the spot in the cell on the fore wing beneath suggests *Z. karsandra* (Mre.).

Godart (*loc. cit.* : 701), in discussing *Polyommatus hylax*, referred to Donovan's figure and suggested that Fabricius' "vague" description might apply to a female of *lysimon** (i.e., *Z. karsandra* (Mre.)), from which the blue colour at the wing bases had disappeared. Horsfield (1828, *Descr. Cat. Lep. Mus. E.I.Co.* : 66) misidentified *hylax* as the *Pithecopus* species, founding this latter genus on his wrongly determined species. Although the Fabrician description cannot be applied to *Pithecopus hylax* of Horsfield, which does not occur in South India, later authors, without exception, have perpetuated Horsfield's mistake.

I consider that *Papilio hylax* Fab. must be identified as *Zizula gaika* (Trim.), and not as *Zizeeria karsandra* (Mre.), as the former is definitely the smallest in the group, the female upperside is always entirely brown and the insect is common in South India. In *Z. karsandra* the wing bases in the female are usually, but not invariably, blue-dusted, and the average size is hardly less than that of *Z. otis* (Fab.).

Regarding Horsfield's genus *Pithecopus*, the sole species cited is

* *Zizeeria karsandra* (Mre.) is usually maintained as a species distinct from *Z. lysimon* (Hbn.). In either case, *Papilio lysimon* Hbn. [1803-1804] is pre-occupied by *Papilio lisimon* Stoll, 1790, a species of Riodinidae.

Pithecop's hylax Hsf. nec Fab., which is accurately described and figured, and there can be no mistaking the author's meaning. The type of *Pithecop's* Hsf., therefore, is *Pithecop's corvus corax* Fruh. (= *P. hylax* Hsf. nec Fab.).

NOTES AND OBSERVATIONS.

POLYGONIA C-ALBUM AB. DILUTUS.—I have received a coloured sketch of a very pale ochreous-white *P. c-album* ab. *dilutus* made by Lord Bolingbroke from a specimen he captured on August 6 last near Purton, Wilts. He states (in his letter dated October 1, 1940) that it is in perfect condition, without a blemish. Every comma I have ever captured seems more or less rubbed or chipped. This form must be very unusual, as I know of only about half-a-dozen having been taken altogether. Lord Bolingbroke says at the moment of writing there are upwards of a dozen typical comma in the garden at Lydiard Park, Swindon.—F. W. FROHAWK; October, 1940.

LATE EMERGENCES OR EXTRA BROODS.—I have noted the following this autumn. September 4: *Apamea lithoxylaea* and *Agrotis exclamationis*; Mr. G. W. Wynne of Buxted tells me he took *lithoxylaea* a week later. September 12: *Lampra fimbria*, and also on 14th. September 17: *Leucania pallens*. September 26: *Agrotis segetum*. October 17: *Pieris rapae*, *Lycaena phlaeas* and *Phlogophora meticulosa*. October 22: *Pieris brassicae*, and full grown larvae on 28th. November 1: *Peridroma porphyrea* (= *Agrotis saucia*).—(Dr.) G. V. BULL; Sandhurst, Kent.

NYMPHALIS IO IN THE WEST OF SCOTLAND.—This butterfly has been attracting attention in the West of Scotland of recent years. The question is being asked, "Is it extending its northern range, or are we having more frequent invasions from the south?" During the past sixty years it was only a rare visitor beyond the southern counties of Scotland. Since the autumn of 1936 it has been frequently reported from Arran. I found the larvae there in 1938. In 1937 a single specimen was noted near Paisley, and at Helensburgh on the Clyde. In 1939 several were seen about Brodick, Arran, and one was seen even high up on Goatfel. But all these records, scattered over a very wide area, reached a climax this year, 1940. From Carlisle in Lanarkshire to south Ayrshire, Renfrewshire, Bute, Cumbrae and Arran correspondents have reported them in considerable numbers. Especially was this the case in gardens where Buddleias and single dahlias were in flower. Here they were associated with Red Admirals and Small Tortoiseshells. A noticeable absentee from these revels was *Vanessa cardui*; it is some years since it was last seen in our neighbourhood.—A. M. STEWART, F.R.E.S., F.Z.S.; 8, Ferguslie, Paisley.

UNUSUAL BEHAVIOUR OF LYSANDRA CORIDON.—With reference to Mr. Birkett's inquiry in the October issue (*Entom.*, 73: 234). As one

who has observed and collected this insect for the past 35 or 40 years and in that time examined hundreds of thousands, perhaps my experience may interest him. The habit he mentions is nothing unusual, but there are a few points worth noting. When collecting I have particularly noticed that the insect mostly favours horse droppings rather than those of cows, although they will frequent these when the former are absent. They appear to be attracted mostly by droppings laid during the night or early morning when quite fresh; after the sun's rays have dried it the attraction seems to vanish, as one rarely sees the insect there in the afternoon or evening. I agree with Mr. Birkett that it is rare to see a female among the crowd. Two things in this connection are to me a mystery. One is, why are males only subject to the attraction, and, secondly, why are no other species affected? Here is a question for some of our experts to answer. I am afraid I can't.—H. HAYNES; 6, Nelson Road, Salisbury, Wilts.

LYCAENIDAE in 1940.—This year has been remarkable in Sussex and Surrey for the unusual numbers of many species of Lepidoptera, some of which are usually uncommon or even scarce. *Cyaniris argiolus* was more abundant in Surrey than I have seen it for 14 years, and I took a fine ab. *antico-radiata* from amongst the spring brood. *Polyommatus icarus* was common and produced a number of banded forms and very blue females in the spring brood. In July I discovered a colony of *Plebejus argus* in which the females were in superior numbers to the males in the proportion of nearly 20 to 1, but the peculiarity of this colony was the high percentage of intersexes obtained; in three visits to the ground no fewer than 21 intersexes were taken, or roughly 7 per cent. of females examined. Some were only slightly scaled with blue, others well marked and splashed with it, whilst two or three were almost halved brown and blue, and one was beautifully splashed with blue all over the upper surface of all four wings. Of undersides, several *juncta* forms were taken and one fine female ab. *radiata*. *Lysandra coridon* was very early and appeared, severally, on July 11 in Surrey. I went down to Sussex in early August and took a magnificent pair of ab. *radiata* (undersides), the male of whitish ground colour with heavy black bars on fore wings and two on each hind wing. This specimen is also ab. *ultra-fowleri* on upperside, the white spots or wedges on all wings being entirely without black centres. The female is of a creamy white ground-colour with even heavier black bars than the male and five black radiations on the hind wings. Several *obsoleta* forms were taken, including three *antico-caeca* (males), one with white fore wings and greyish hind wings. Of uppersides, I took a fine blackish slate-coloured male (ab. *pulla*), six ab. *fowleri*, and a nice gynandromorph, the left hind wing being nearly all blue, the others brown. *Polyommatus icarus*, which was scarce here, produced a specimen of the rare ab. *rufina*. In September I worked in Surrey for varieties of *Lysandra bellargus*, but without success.—A. E. STAFFORD; Corydonis, Colborne Way, Worcester Park, Surrey.

ACHERONTIA ATROPOS IN HERTS.—A friend of mine rushed round to me on September 30 at 12.30 with a "huge moth" she had just picked up from a grass bank by the roadside a few minutes' walk away. On inspection an *A. atropos* was disclosed in a very exhausted state, almost dead in fact, but in excellent condition for the cabinet; the condition was, in fact, similar to that of a freshly emerged moth. R. D. MORTON; 29, Lancaster Avenue, Hitchin, Herts, October 5, 1940.

SOCIETIES.

THE MANCHESTER ENTOMOLOGICAL SOCIETY.—July 16, 1939.—A successful ramble in and around Delamere Forest took place with the Society for British Entomology, who were holding their Fifth Annual Congress in Manchester.

November 11, 1939.—Mr. H. N. Michaelis, President, in the Chair.—Owing to the war, the Exhibit Meeting was held on this date instead of on the first Wednesday in October. Exhibits were shown by the following members: Mr. J. E. Cope, Coleoptera, including *Xylodrepa quadripunctata* Sch., and *Hylobius abietis* L., both from Delamere; Mr. G. S. Kloet, a selection of recently taken Hymenoptera; Mr. H. L. Burrows, *Eucestia rufata* F., and *Donacaula mucronella* Schiff; Mr. C. H. Frost, *Trypanus cossus* L. and cocoon bred from Southport, also a large ichneumon-fly bred ex *Deilephila elpenor* L.; Mr. H. Britten, a species of Crane-fly new to the British list., viz. *Dicranota robusta* Lundst. from the Goyt Valley; Mr. G. J. Kerrich, species of *Figitidae*, parasites of Lacewing-flies; Mr. H. N. Michaelis, a drawer of the Sallow moths (*Xanthia* Ochs.) from his collection; Mr. L. Nathan, *Sirex juvenicus* L. from Dukinfield, Cheshire.

January 20, 1940.—Mr. H. N. Michaelis, President, in the Chair.—Exhibits were shown by the following members: Mr. J. E. Cope, 14 species of the genus *Apion* (Coleoptera), from Colwyn Bay, September, 1939; Mr. H. Britten, a Dipteron, *Stictoscatella stenhammeri* Zett., from Rudheath, Cheshire, new to the Lancs. and Ches. List; T. H. Hanson, an albino form of *Pieris napi* L. ab. *citrona* Frohawk, bred among many of the ab. *citrona*; G. C. Bartindale, Coleoptera, including *Chrysolina menthastris* Suf. from Budleigh Salterton; Mr. G. J. Kerrich, the cockroach *Blatella germanica* L., known locally as Steam Fly, with specimens of *Blatta orientalis* L. and *Periplaneta americana* L. for comparison; Mr. L. Nathan, Southport district, 1939; *Podalonia viatica* L., *Lasius niger* L., *Andrena albicans* Kirby, *Acrydium vittatum* Zett., *Nabis ferus* L., *Tipula variipennis* Mg., *Empis trigramma* Mg. Gatley, Ches., May 13, 1939; *Chironomus pilicornis* F., *Baetis atrebatinus* Eat. Mr. G. J. Kerrich gave an interesting address on the present value of Entomology, as compared with the poor opinion expressed in the past, which still lingers as a popular prejudice among the less-informed.

February 17, 1940.—Annual Meeting.—The retiring president, Mr. H. N. Michaelis, gave his Presidential Address, "Breeding Lepidoptera," mentioning his successes with a number of species, and dealing with such matters as ova searching, pairing, and generally useful

food-plants, etc. The following officers were elected: *President*, H. Kitchen; *Vice-President*, G. S. Kloet; *Secretary*, R. J. Wigelsworth; *Assistant Secretary*, L. Nathan; *Treasurer*, J. H. Murgatroyd; *Librarian*, J. E. Cope; *Auditor*, W. Buckley; and *Council*, G. J. Kerrich, T. H. Hanson and H. Britten. Mention was made of the loss the Society has sustained by the death of the following members: Mr. R. Tait, an original member and former president; Mr. H. Massey, an old member who joined in 1903; and Dr. John Hope, who had been an active member since he joined in 1932. Exhibits were shown by the following members: Mr. H. Britten, Diptera, viz. *Anopheles claviger* Mg., *Anopheles maculipennis* Mg., *Theobaldia annulata* Schr., *Culex pipiens* L., *Taeniorhynchus richiardii* Ficalbi; Mr. P. Meek, Coleoptera bred and taken during 1939; Mr. T. H. Hanson, a nice bred series of melanistic *Ennomos autumnaria* Wernb.; Mr. G. J. Kerrich, a fine melanic ab. of *Argynnis seleno* Schiff. taken New Forest, 1931; Mr. G. S. Kloet, a collection of Diptera and Hymenoptera.

March 16, 1940.—The President, Mr. H. Kitchen, in the Chair.—Mr. H. Britten gave a very interesting talk on "Gnats and Midges" illustrated by several cases of specimens. He first mentioned the Fungus Gnats, the larvae of which probably feed largely in fungi. They include the Sciarids, one of which attacks the edible mushroom. The larvae of others feed on liverworts, whilst some again are predacious. He then dealt with the *Culicidae* or Gnats proper, mentioning malaria, which was prevalent in the Fens and Thames estuary about 1870. Mr. Britten showed bred specimens of *Orthopodomyia pulchripalpis* Rond., from larvae received from the New Forest; these larvae, which are aquatic, live in water-filled holes in old trees. Then the *Cecidomyiidae* or Gall Midges were dealt with, and it was explained that strangely enough the larvae of some of these were predacious on mites and aphides. Then came the Chironomid Midges, whose mud-haunting larvae are known as "Blood Worms" from their bright red colour. Lastly were mentioned the Biting Midges, or *Ceratopogoninae*, very troublesome to man, in spite of their small size.

April 13, 1940.—Mr. H. Kitchen, President, in the Chair.—Mr. J. E. Cope read an interesting paper on Coleoptera, illustrating his remarks with a good selection of his own specimens. He dealt with such matters as habits, variation in size of the same species, sexual dimorphism, etc. A number of members joined in a lengthy discussion. Exhibits were shown by the following members: Mr. G. J. Kerrich, a box of Tachinid flies from Mr. H. Audcent; Mr. G. W. R. Bartindale, a fine selection of Coleoptera; Mr. L. Nathan, a few Hemiptera and Coleoptera taken in the Southport district March 23, 1940; the Tachinid fly *Voria curvinervis* Zett. bred July 20, 1939, from a larva *Melanchra persicariae* L., Manchester district.—L. NATHAN (*Asst. Hon. Secretary*).

We deeply regret to have to record the death of Dr. F. W. Edwards, F.R.S., on November 15th.—Ed.

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